THE IRON TRADE REVIEW

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Great Tonnages of Pig Iron Have Been Sold

And Large Amount of Business is Pending—Proposed Increase in Size of Freight Cars—Low Prices Have Not Disappeared

The buying of very large tonnages, started in southern iron during the past few days, soon expanded to include large tonnages of northern grades and is growing in volume. As in the case of recent car buying, the placing of orders for pig iron has been encouraged by very low prices. On a large part of the tonnage of southern iron sold, $9.75, Birmingham, for No. 2, was the basis. This is the lowest price which has been made on southern iron since 1904, and previous to that year southern iron had not gone below $10 since early in 1899. On some of the tonnages it is understood that as low as $9.50 was done. Southern basic sold at from $9.50 to $9.60, Birmingham. The Tennessee Coal, Iron & Railroad Co. sold over 150,000 tons, divided between foundry and basic grades about equally. A leading cast iron pipe interest has purchased 100,000 tons. It is estimated that total sales of southern iron approximate 300,000 tons. In the Pittsburgh district, a rather surprising development was the appearance of an independent steel company with an inquiry for a large tonnage of basic. As this company has a number of idle blast furnaces, the presumption is that the purchase is contemplated on account of very low prices recently prevailing. Although there is strong evidence that as low as $12.15, valley furnace, was recently done on basic, the price has now stiffened. Another independent steel company not having its own blast furnace, is understood to have contracted for 50,000 tons of basic. The American Rolling Mill Co., Middleton, O., has closed for 15,000 tons of basic. The Gould Coupler Co., Depew, N. Y., has closed with a valley interest for from 10,000 to 15,000 tons for forward delivery. Recent sales of basic in Pittsburgh and Ohio territory for delivery next year, amount to about 100,000 tons. Additional purchases of low grade irons by cast iron pipe makers in the Delaware River district during the past week are estimated from 30,000 to 35,000 tons. The purchases are largely for nearby shipment.

Railroad Buying

A very important announcement is that the engineers of the Pennsylvania railroad have decided in favor of ordering much larger freight cars for the system. The cars are to be 52 feet long and will require about 25 tons of steel and iron in their construction, an increase of 25 per cent over the heaviest steel cars now in use. The making of these new cars will involve a considerable increase in demand for steel for bridges, rails and ties, but the change will, of course, come gradually. It is understood that the Pennsylvania will order 20,000 cars, but delivery may be extended over three years. The Canadian Pacific has ordered 4,500 box cars, 1,000 each from the Pressed Steel Car Co. and the American Car & Foundry Co., and 2,500 from the Canadian Car & Foundry Co. The plates for the cars to be made by the Canadian company and the Pressed Steel Car Co. will be rolled by the Carnegie Steel Co. The Missouri Pacific has placed orders for 2,000 automobile and box cars, 1,500 going to the American Car & Foundry Co., and 500 to the Standard Steel Car Co.

Pipe

A new basing card on steel pipe will be issued, effective Dec. 1, which will show a reduction of $2 a ton on black and galvanized butt-weld and $4 a ton on black and galvanized lap-weld steel pipe. The Consolidated Gas Co., New York, has ordered 15,500 tons of cast iron pipe for spring delivery. It is understood the order was awarded to the United States Cast Iron Pipe & Foundry Co.

Structural Material

The American Bridge Co. has taken contracts for 17,500 tons for subway work, Lexington avenue, New York, 4,000 tons for the building for the Bureau of Printing and Engraving, Washington, and 2,100 tons for a bridge across the Susquehanna, near Williamsport. Levering & Gerrigues have 4,600 tons for the Hyde loft, Twenty-fifth street, New York. The New England Structural Co. has 1,100 tons for the Young Men's Christian Association, Boston. The American Bridge Co. will erect the Seneca building, Buffalo, 3,200 tons, and the Edwards department store, Rochester, N. Y., 1,000 tons. In finished materials generally, there is much better sentiment and in some directions a tendency toward hardening of prices. But low prices have by no means disappeared and it seems probable that they will not until order books are in a much better condition than at present. The Republic Iron & Steel Co. has advanced the price of steel bars to 1.10c, up to Jan. 1, and after that to 1.15c.

Coke and Scrap

Contracts for furnace coke for 1912 shipment, made in Pittsburgh recently and just announced, amount to about 1,400,000 tons. A number of other deals are being negotiated. While prices of old material have not generally advanced, there is an increase in firmness in some centers.

WORLD'S IRON MARKETS

PITTSBURGH

Heavy Contracting for Coke—Greater Activity in Pig Iron.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Nov. 28.

Among the important developments of the steel trade in the Pittsburgh district during the past week are the placing of contracts for furnace coke aggregating 1,400,000 tons for delivery over 1912; the announcement that a new basing card on merchant steel pipe will become effective, Dec. 1, showing further reductions of from $2 to $4 a ton; heavy trading in basic pig iron; continued buying of equipment by the railroads and the withdrawal of extremely low quotations on steel bars by at least one large independent steel company. The heavy contracting for coke represents renewals or extensions to existing contracts at $1.60 to $1.65, ovens, for first half, and $1.65 to $1.75, ovens, for delivery over all of 1912. Additional tonnage is under active negotiation. Two large steel companies which have not been regular buyers of basic pig iron in the open market are quietly figuring upon heavy tonnage and are expected to buy upward of 50,000 tons. The American Rolling Mill Co. has practically closed for 15,000 to 20,000 tons of basic and two other companies have bought upward of 6,000 tons, while the Westinghouse Air Brake Co. has purchased upward of 5,000 tons of foundry, gray forge and special iron for first quarter shipment. The announcement of a new basing card on merchant pipe, effective Dec. 1, is interesting in view of the reductions which became effective Oct. 2, and the price guarantee which has been in effect since that time. Additional buying of freight cars and semi-official announcement that the Pennsylvania and other roads are quietly figuring upon a large number of cars have resulted in some of the large car builders withdrawing low quotations made in connection with recent awards. One large company is now quoting 1.10c, Pittsburgh, as the minimum on steel bars and will not promise delivery within five or six weeks. Other steel companies which have large orders for steel bars on their books are expected to take similar action in the near future. The Carnegie Steel Co. is fully operating all of its plate mills, with the exception of the Sharon mill, which is operated only in times of prosperity. Independent sheet manufacturers apparently realize that prices quoted recently are below the cost of production and late developments indicate that the extremely low quotations will be withdrawn in the immediate future.

Pig Iron.—The pig iron market is showing more activity than at any time in months, although recent trading and pending inquiries are chiefly for basic and foundry grades. Prices are not any firmer and conflicting statements are still being made with regard to prices in conjunction with recent sales of basic. In addition to the heavy trading referred to recently, several large consumers are quietly figuring upon forward requirements and two large independent steel companies which heretofore have not been regular buyers of basic in the regular market are understood to be quietly negotiating for round tonnages for 1912 delivery and are expected to purchase upward of 50,000 tons. The American Rolling Mill Co. is understood to have practically closed for 15,000 to 20,000 tons of basic, but details are withheld. An Allegheny valley steel company has taken 3,000 tons of basic at $12.35, valley, for first quarter shipment, but the iron likely will come from a nearby furnace. A southern Ohio furnace has sold 3,000 tons for first quarter at $12.50, valley. The United Steel Co., Canton, O., is taking bids on 1,000 tons of basic for December delivery. A nearby furnace is reported to have disposed of approximately 20,000 tons of basic iron this month, chiefly in exchange deals. The Westinghouse Air Brake Co., which recently withdrew its inquiry for foundry and gray forge iron, has finally closed for upward of 5,000 tons of No. 2 foundry, gray forge and special iron. The foundry iron went at slightly under $13.25, valley, and $12.75, valley, was shaded on the forge iron. Three or four additional inquiries for foundry grades are pending and there is more inquiry for low phosphorus iron. Additional Bessemer has been sold in small lots at $14.25, valley, and the market is firm at this figure. Additional sales of malleable are reported. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.35
Basic, Pittsburgh	13.25
No. 2 foundry, Pittsburgh	14.00
Gray forge, Pittsburgh	13.40
Malleable, Pittsburgh	13.40

(First Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.50
Basic, Pittsburgh	13.40
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.40

Sheets.—A larger volume of sheet tonnage is moving and there has been more buying for forward delivery during the past 10 days. While prices are not any higher than a week ago, some mills have withdrawn minimum quotations at which sales were made early in the month, and the minimum quotations now are 1.85c, Pittsburgh, on black sheets, No. 28 gage, and 2.85c, Pittsburgh, on galvanized sheets, No. 28 gage. Independent manufacturers apparently realize that recent quotations have been below cost of production and recent developments indicate that the mills in the very near future will demand slightly higher prices. Sheet mill operations this month have been fairly satisfactory and prospects for increased production during the next three or four months are more promising. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburgh district:

Blue annealed sheets No. 10 gage, 1.40c; black annealed sheets No. 28 gage, 1.85c to 1.90c; galvanized sheets, No. 28 gage, 2.85c to 2.90c; painted roofing sheets, $1.30 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.50 per square for No. 28 gage, 2½-inch corrugation f. o. b. Pittsburgh.

Tin Plate.—The larger can manufacturers and meat packers have covered for their first half requirements and manufacturers do not anticipate much activity in the way of new business during the remainder of the year. Tin mill operations are slightly heavier, as specifications against contracts for December shipment have been fair. It is

expected that additional mills will be started within the next 10 days. Prices are unchanged. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Local mills have not received any additional orders from domestic roads for 1912 steel rails and no large inquiries have appeared in this market, but some of the large trunk lines are actively figuring upon their requirements and prospects for heavy buying are bright. There is a good demand for light rails, particularly for export. Following the recent buying of standard rails, the railroads have also started to buy track supplies more liberally and several large orders for railroad spikes have been placed at $1.40, Pittsburgh. The market is quoted as follows, the base price on open-hearth rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9/16	$1.40
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x ⅝	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x ⅝	.60
2 x ⅝	.80

Ferro-Alloys.—Prices on ferro-manganese and 50 per cent ferro-silicon are higher. Two small lots of ferro-manganese for December shipment were sold this week at $38.50, Baltimore, and sellers of 50 per cent ferro-silicon have advanced prices $2 a ton, the quotation now being $68, Pittsburgh, which represents an advance of $10 a ton within a month.

We quote ferro-manganese at $38.50 Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $68, Pittsburgh, for prompt and forward delivery; 12 per cent, $23; 11 per cent, $22; 10 per cent, $22, f. o. b. Globe, Jisco and Ashland furnaces. **The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.**

Plates.—The plate market is decidedly firmer and some companies which have been greatly benefited by the recent car buying have refused to accept orders for plates offered at low prices. The Canadian Pacific railroad has placed orders for 4,500 box cars, 1,000 each with the Pressed Steel Car Co. and the American Car & Foundry Co., and 2,500 with the Canadian Car & Foundry Co. The plates for the cars awarded to the Canadian company and the Pressed Steel Car Co. will be rolled by the Carnegie Steel Co. The Missouri Pacific Iron & Mountain railroad has placed orders for 2,000 automobile and box cars, 1,500 going to the American Car & Foundry Co. and 500 to the Standard Steel Car Co. It is stated semi-officially that the Pennsylvania Railroad Co. has decided to buy from 15,000 to 30,000 freight cars and it is expected that some awards will be announced in the near future. Some of the larger car building companies have from five to six months' work on their books and in two instances at least have rejected orders which were offered at prices at which some orders were placed recently. Some of the independent plate mills in this territory have two or three months' work on their books and are quoting 1.15c, Pittsburgh, as the minimum, although 1.10c, Pittsburgh, can still be done. The new plate mill of the Republic Iron & Steel Co. at Youngstown, O., with a capacity of 5,000 tons a month, will be started Dec. 15. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.10 to 1.15c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Steel.—There is more inquiry for crude steel and several sales involving from 500 to 1,000 tons each have been made during the past week. Several mills in this territory could handle more business and price concessions are still being offered in some quarters, although prices generally are not any lower than a week ago. Several large companies in this territory report that the daily average run of mill orders for billets and sheet bars in November will be equal to that of the preceding month, although the total for this month will be smaller than in October on account of the holiday and the shorter month. There is a fair demand for sheet bars, but demand for tin bars is light, as this is the off-season. Quotations on billets and sheet bars follow:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $19 to $19.50, with the usual extras for size and analysis, and open-hearth rolling billets, $19 to $19.50; Bessemer sheet and tin bars are quoted at $20 to $20.50, and open-hearth sheet bars are quoted at $20 to $20.50, f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $24, Pittsburgh.

Hoops and Bands.—There has been some buying of hoops and bands for forward delivery, but specifications are light and the market as a whole is unsatisfactory. We quote the market as follows:

Hoops in carload lots, 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands, 1.05c to 1.10c, base, with net extras, as per standard steel.

Merchant Bars.—The feature of this market is the withdrawal of low quotations by one of the larger independent companies, which is now quoting 1.10c, Pittsburgh, as the absolute minimum. This company has heavy tonnage on its books and is not promising delivery within five or six weeks. Other steel companies have booked heavy tonnage of steel bars for prompt and forward delivery, and, while there is less talk of extremely low prices, some mills are still quoting 1.05c, Pittsburgh, on the more desirable tonnage for immediate shipment. Demand for bar iron is only fair and prices are unchanged. There is a better demand for shafting and the general tone of the market is more cheerful, although prices are practically unchanged. We quote the market as follows:

Common iron bars, 1.25c to 1.30c, Pittsburgh; Bessemer and open-hearth steel bars, 1.05c to 1.10c; plow and cultivator, 1.15c; channels, angles, zees, tees, under 3 inch, 1.20c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 and 5 per cent to 60 and 10 per cent off in carloads and 57 per cent in less than carloads, delivered in base territory.

Muck Bar.—A few scattered inquiries for muck bar are reported, but no sales of importance have been made and we continue to quote muck bar nominally at $28, Pittsburgh, with a premium of $1 a ton for all pig iron muck bar.

Structural. — Structural lettings in the immediate Pittsburgh territory during the past week have been chiefly for small lots. The American Bridge Co. received contracts for the Seneca building, Buffalo, which will require 3,200 tons of steel, and the E. W. Edwards department store and warehouse at Rochester, N. Y., which will require 1,000 tons of steel. Some of the railroads are figuring on some bridge work, but no important awards of this character have been made during the week. We quote the market as follows:

Beams and channels, 15 inches and under,

1.10c to 1.15c; over 15 inches, 1.20c to 1.25c; zees, 1.10c to 1.15c; tees, 1.15c to 1.20c; angles, from 3 to 6 inches, 1.10c to 1.15c; over 6 inches, 1.20c; universal and sheared plates, 6¼ inches wide and wider, 1.20c.

Merchant Pipe.—It is officially announced that there will be a new basing card on steel pipe effective Dec. 1, which will show a reduction of $2 a ton on merchant pipe and full weight sizes and a reduction of $4 a ton on lap weld merchant pipe. There will be no change in prices on extra strong and double extra strong steel pipe and the guarantee against decline will be withdrawn. On Oct. 2, a new card was issued showing reductions of $2 a ton on all black steel pipe, with the exception of ⅜ and ½-inch, on which the reduction was $4 a ton; a reduction of from $6 to $14 a ton on galvanized steel pipe and a reduction of $2 a ton on extra strong and double extra strong pipe. The new card issued on that date also showed a reduction of $2 a ton on ⅜ and ½-inch black iron pipe and $4 to $12 a ton on galvanized iron pipe. At that time, manufacturers issued a guarantee in case of decline effective to Jan. 1, 1912, but in spite of this guarantee concessions have been offered by some mills. A fair run of small orders for line pipe is reported by local mills, although the season for this market is practically over. Specifications against contracts for merchant iron and steel pipe are fair and a moderate amount of new business is appearing. We quote the following official discounts which became effective Oct. 2, in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	73	53	68	48
⅜ inch	74	64	69	59
½ inch	77	67	72	62
¾ to 1¼ inch	80	72	75	67
2 to 3 inches	81	74	76	69
	Lap weld.			
2 inches	77	70	72	65
2½ to 4 inches	79	72	74	67
4½ to 6 inches	78	70	73	65
7 to 12 inches	76	66	71	61
13 to 15 inches	..	..	47	..
Extra Strong,	Plain Ends.			
			Butt weld.	
⅜, ¼, ⅛ inch	70	60	65	55
½ inch	75	69	70	64
¾ to 1¼ inch	79	73	74	68
2 to 3 inches	80	74	75	69
Extra Strong,	Plain Ends.			
			Lap weld.	
2 inches	76	70	71	65
2½ to 4 inches	78	72	73	67
4½ to 6 inches	77	71	72	66
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong,	Plain Ends.			
			Butt weld.	
½ inch	65	59	60	54
¾ to 1¼ inch	68	62	63	57
2 to 3 inches	70	64	65	59
Double Extra Strong,	Plain Ends.			
			Lap weld.	
2 inches	66	60	61	55
2½ to 4 inches	68	62	63	57
4½ to 6 inches	67	61	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes. — Mills have more orders for locomotive boiler tubes on their books than for some time, as the result of increased buying of locomotives, but the demand for merchant boiler tubes is light and prices are irregular. Official discounts on steel and charcoal iron boiler tubes in carload lots follow:

Steel:

1¼ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	72
3½ to 4½ inch	75
5 and 6 inch	67½
7 to 13 inch	65

Charcoal Iron:

1½ inch	48
1¾ to 2¼ inch	50
2½ inch	55
2¾ to 5 inch	60

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—Quotations of $1.50, Pittsburgh, for wire nails and $1.30, Pittsburgh, for plain wire, noted in some sections last week, are now pretty general. The extremely low prices, which represent a reduction of $6 a ton, as compared with the market level in January of this year, have brought out more inquiry for forward delivery and one or two railroads and other large users of wire nails have made firm offers to contract for their full requirements over the next 12 months at today's price level, but some mills are quoting only for delivery within 60 days from receipt of order. Cut nails have been sold this week at $1.50, Pittsburgh. We quote the market as follows:

Wire nails, jobbers, carload lots, $1.50 to $1.55; retailers' carload lots, $1.55 to $1.60; cut nails (western makers), jobbers' carload lots, $1.50; painted barb wire, jobbers' carload lots, $1.50 to $1.55; retailers' carload lots, $1.60 with 30c for galvanizing; plain wire to jobbers in carloads, $1.30 to $1.35; and to dealers, in carloads, $1.35 to $1.40; polished staples, $1.50; galvanized staples, $1.80.

Wire Rods.—There is little trading in wire rods, as most users are covered by contract. Prices are not very firm. We quote Bessemer and open-hearth wire rods at $25, Pittsburgh.

Coke.—Contracts for furnace coke for 1912 shipment, which have been negotiated during the past few weeks and which were announced today, aggregate approximately 1,400,000 tons for shipment east and west of Pittsburgh. While most of these are renewals or extensions to existing contracts, a few consumers who have been buying in the open market from month to month have contracted for forward requirements. Other deals are under negotiation and additional sales likely will be announced in the near future. These transactions have fixed a price for furnace coke for first quarter and first half at from $1.60 to $1.65, ovens, and for all of 1912 at $1.65 to $1.75, ovens. The contracts announced today include, 12,000 tons a month for all of 1912 at $1.65, ovens; 7,000 tons a month for one year at $1.75, ovens; 8,000 tons a month for all of 1912 at $1.70, ovens; 60,000 tons for shipment over the first half at $1.60, ovens; two sliding scale contracts, one of which involves 9,000 tons a month and the other 12,000 tons a month for one year beginning Jan. 1. A steel company at Youngstown has closed approximately for 25,000 tons a month over all of 1912. A large portion of this tonnage figures in exchange deals. A large Mahoning valley interest has closed with a well known furnace coke producer for 35,000 tons a month on a total of about 420,000 tons, for shipment during 1912 at about $1.65, ovens. There has also been several small sales of prompt coke for immediate shipment at $1.50, ovens. Demand for foundry coke is only fairly heavy and a few important contracts have been announced so far. We quote Connellsville furnace coke for prompt shipment at $1.50, ovens, and for delivery over first half at $1.60 to $1.65, ovens, and for delivery over all of 1912 at $1.65 to $1.75, ovens. On high grade Connellsville foundry coke we quote from $1.90 to $2, ovens, for prompt shipment and $2 to $2.40, ovens, for forward delivery. The Connellsville *Courier's* figures for the week ending Nov. 18 show 27,155 active ovens with an output of 316,379 tons, as compared with 27,005 active ovens and a production of 323,363 tons the previous week.

Old Material.—While the prices on old material are not quotably higher, the market as a whole is very firm and it is more difficult to get some grades of material at quotations noted below. Consumers are accepting shipments against contracts in a liberal manner, but there has been little fresh buying. Dealers are not as anxious to sell and in some cases consumers have experienced difficulty in getting material from producers who believe that they will be able to get higher prices in the near

future. Three or four lots of heavy melting steel, ranging from 200 to 1,000 tons, have been sold at from $12.15 to $12.25, delivered. Some dealers are now quoting $12.25, delivered, as the minimum. We quote, gross tons, delivered in the Pittsburgh district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee as follows:

Heavy melting scrap	$12.00 to 12.25
Rerolling rails	12.50 to 12.75
Malleable	11.50 to 12.00
Bundled sheet scrap	10.00 to 10.50
Iron axles	20.00 to 21.00
Old iron rails	14.00 to 14.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	12.00 to 12.50
Old car wheels	12.25 to 12.75
Low phosphorus	14.50 to 15.00
Machine shop turnings	8.75 to 9.00
Cast borings	8.00 to 8.50
No. 1 cast scrap	12.50 to 12.75

CHICAGO

Car Building Calls for Much Material—Pig Iron More Active.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Nov. 28.

Orders from car builders for plates, bars and structural material continue to be the feature of the market in the west and orders for bar iron have shown considerable improvement during the past ten days. Although there is only a comparatively light demand for structural material for architectural purposes, there is a considerable tonnage going into cars and bridges, which is maintaining the demand. Local plate mills are booked from eight to 12 weeks ahead and sheet mills in this territory are running full. There has been some improvement in the demand for boiler tubes and for the more commonly used sizes of merchant pipe. On account of the immense capacity of the Chicago district, compared with previous years, the liberal tonnages specified recently have not been sufficient to have much stiffening effect on prices. Some of the extremely low quotations on bars and plates are being withdrawn, but otherwise the general level of the market remains unchanged. Scrap dealers are inclined to bid up the price, but consumers of old material see no cause for an increase in quotations at the present time.

Pig Iron.—There was heavy buying of southern basic and foundry iron during the past week. The International Harvester Co. has purchased approximately 20,000 tons for its various plants and the leading radiator interest has entered the market for 2,000 tons of southern iron for its southwestern plants. Recent sales of southern iron have developed a price of $14.10, Chicago, with delivery over the remainder of the year, but there is no evidence that $14.35, Chicago, can be shaded for first quarter and first half shipment. The low prices recently made are for immediate delivery. The lower price on southern iron has been practically forced in this territory by the extremely attractive propositions available to buyers of northern foundry. A northern Indiana agricultural implement maker is in the market for 1,000 tons of No. 2 southern foundry iron for delivery over the first half. Although there has been considerable buying by large interests recently, the general market in the west shows no special increase in activity.

The following prices represent the market for Chicago delivery, except northern foundry No. 2 and malleable Bessemer, which are quoted f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$16.50
Northern foundry No. 2	14.00
Southern foundry No. 2	14.10
Southern silveries, 5 per cent silicon	15.60
Jackson Co. silveries, 8 per cent	17.40
Malleable Bessemer	14.00
Alabama basic	14.35

Billets.—Prices for large quantities of forging billets show a noticeable hardness and the demand continues to be moderately good. We quote, open-hearth forging billets, $25 to $26; re-rolling billets, $22, Chicago.

Merchant Bars.—Bar iron mills have booked a somewhat heavier tonnage during the past two weeks and are consequently operating on better schedules. Orders, however, have not been sufficient in volume to have much effect on the price situation and makers continue to quote 1.15c, Chicago, freely. Mills rolling soft steel bars are well provided with business, but competition from outside points is holding down the price and there does not seem to be any prospect of advanced quotations in the near future. Merchant steel sales are made according to the individual circumstances surrounding each deal and there is considerable latitude in the prices being named by manufacturers. Although bars are selling freely at 1.25c, Chicago, and on attractive business $1 a ton less will be accepted, these prices hold generally for delivery only in the immediate future. Makers are not anxious to fill up their order books with future tonnage at prevailing quotations.

We quote, Chicago delivery, as follows:

Bar iron, 1.15c to 1.20c; hard steel bars, rerolled, 1.15c to 1.20c; soft steel bars and bands and small shapes, 1.25c to 1.30c, base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c. Shafting 60 per cent off list for carload lots, 57 per cent off for less.

On iron and steel from local stock, we quote, as follows:

Bar iron, 1.55c to 1.65c per pound base; soft steel bars, 1.55c to 1.65c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—Recent heavy car orders have furnished the structural mills with a fair amount of business and railroad orders for bridges are moderately good. The largest structural contract reported in the west last week calls for 1,056 tons for an addition to the Oregon hotel at Portland, which will be fabricated by Milliken Bros. A contract for a small building to be erected by the Crane Co., Chicago, 272 tons, has been let to the Hansel-Elcock Co. The Riter-Conley Mfg. Co. has taken 137 tons for 80, 50-foot steel transmission poles to be erected by the Southern California Edison Co. near Los Angeles. The Lackawanna Bridge Co. has been awarded 405 tons of bridge material by the Chicago, Indianapolis & Louisville railroad, and the American Bridge Co. has taken 500 tons from the Burlington for girder spans.

We quote, structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.30c to 1.35c. For extras, see Pittsburgh report.

Plain material out of store, is as follows:

All angles, 3 inches and larger, including 6 inches, $1.65 to $1.75 per 100 pounds; angles over 6 inches, $1.75 to $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.65 per 100 pounds, base; channels, 3 inches and larger, $1.65 per 100 pounds, base.

Rails and Track Fastenings.—While considerable new rail business is under negotiation, there have been no orders of consequence placed recently. Most of the specifications submitted thus far by western lines are tentative. The San Antonio & Aransas Pass railway is reported to be in the market for 20,000 tons of standard rails.

We quote, light rails, f. o. b. Chicago and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.55c to 1.60c, smaller

size spikes, 1.65c, base; track bolts with square nuts, 2.00c base.

Plates.—Mills continue to be well supplied with business, although the amount of tonnage received last week was somewhat below the average prevailing during the month. Business has not yet reached such proportions that the mills feel in a position to require higher prices and tank plates in base sizes are being sold at from 1.28c to 1.35c, Chicago. The Live Poultry Transportation Co., Chicago, is in the market for 250 steel underframe poultry cars. The Canadian Pacific has ordered 4,500 box cars destined largely for use on its western lines, divided as follows: 1,000 to the American Car & Foundry Co.; 1,000 to the Pressed Steel Car Co., and 2,500 to the Canadian Car & Foundry Co. In addition to the heavy car inquiries recently reported, several western railroads are figuring on their requirements tentatively. The Harriman Lines are making up specifications on 12,000 freight cars and the Santa Fe is figuring on 8,000 cars of various sizes. The Erie railroad has ordered 25 milk cars from the American Car & Foundry Co.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.28c to 1.35c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.65c.

Sheets.—The local mill is operating practically at capacity and business seems to be coming in a little more freely, but prices show no change for the better. Galvanized sheets are a little firmer than black, largely on account of the high price of spelter.

We quote, store prices, as follows:

Blue annealed, No. 10, 1.95c; No. 12, 2.05c. Box annealed, No. 28, 2.40c. Galvanized, No. 28, 3.35c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—With the close of navigation on the Great Lakes, jobbers in the northwest are curtailing their wire purchases on account of higher freight rates prevailing over the all-rail routes. This is in accordance with the usual conditions prevailing at this time of the year. In general the trade is in fair shape and prices seem to have found a level on which the producer and consumer can get together.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers, carload lots, $1.73 to $1.78; retailers' carload lots, $1.83; retailers' less than carload lots, $1.93; painted barb wire, jobbers' carload lots, $1.73 to $1.78; retailers' carload lots, $1.83; retailers', less than carload lots, $1.93, with 30c for galvanizing; plain wire to jobbers, $1.53 to $1.58.

Merchant Pipe and Tubes. — The demand for boiler tubes is somewhat better, although by no means sufficient to fill up the mills in the west. Numerous small orders for iron and steel pipe have been placed with western jobbers recently and the trade is moving along easily.

We quote, merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛-¼ inch	70.2	49.2	63.2	41.2
⅜ inch	74.2	63.2	66.2	56.2
2 in. to 3 in.	78.2	70.2	72.2	64.2
4½-6 inches	75.2	66.2	69.2	60.2
7-12 inches	72.2	61.2	67.2	56.2
Extra Strong Plain Ends.				
½ inch	71.2	64.2	54.2	52.2
2-3 inches	76.2	69.2	61.2	55.2
7-8 inches	66.2	55.2	59.2	47.2
Double Extra Strong.				
½ inch	59.2	51.2	....	....
2-3 inches	64.2	56.2	....	....
7-8 inches	54.2	42.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¾ to 3½ inch	65	50	46
3½ to 4½ inch	67½	50	46
5 to 6 inch	55	..	..

Cast Iron Pipe.—Cast iron pipe makers are taking a fair amount of routine business and are looking forward toward a reasonably active winter. Unless there is a remarkable falling off in orders during the remainder of the year, the leading makers will do a very satisfactory business this year. No lettings of consequence were reported in the west last week.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $26.50; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—While there is some slight buoyancy in the scrap market, it lacks sufficient strength to create any upward movement in prices. Dealers seem to have a little more faith in the situation and are offering railroads and other scrap producers slightly better prices, but the melters cannot see their way clear to pay increased quotations until the prices of finished materials are advanced. The Illinois Central has disposed of a tonnage of scrap at slightly higher prices than have prevailed recently. The Chicago & Eastern Illinois Railroad Co. opened bids on 40 tons of steel wheels Nov. 29.

We quote the market, for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.	
Old car wheels	$12.00 to 12.50
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.00 to 12.50
Old steel rails (3 ft. and under)	10.75 to 11.25
Frogs, switches and guards	10.00 to 10.50
Heavy melting steel	9.75 to 10.25
Shoveling steel	9.25 to 9.75
NET TONS.	
No. 1 R. R. wrought	$10.00 to 10.50
No. 2 R. R. wrought	9.00 to 9.50
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.00 to 10.50
Shafting	13.00 to 13.50
Iron car axles	16.50 to 17.00
Steel car axles	15.00 to 15.50
Locomotive tires	14.00 to 15.00
Dealers' forge	9.00 to 9.50
Pipe and flues	7.00 to 7.50
No. 1 cast	10.25 to 10.75
No. 1 busheling	8.00 to 8.50
No. 2 busheling	5.75 to 6.25
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	12.50 to 13.00
Cast and mixed borings	4.75 to 5.25
Machine shop turnings	5.75 to 6.25
Railroad malleable	9.50 to 10.00
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.00 to 12.50
Angle bars, steel	8.60 to 9.10
Stove plate and light cast scrap	9.25 to 9.75

More Active Buying of Pig Iron—Low Prices Prevail.

Office of THE IRON TRADE REVIEW,
Penton Building, Nov. 28.

Iron Ore.—The season on the lakes is rapidly drawing to a close with only a few vessels afloat. Although the season has been unsatisfactory in many ways, especially for the independent vessel men, the outlook is that the opening of navigation next year will find the ore situation very much improved. Buying for 1910 consumption was on a very liberal scale while that for 1911 was greatly reduced. Hence it is expected that the ore on docks, Dec. 1, will be less than it was a year ago and that by May 1, stocks on hand on docks and in furnace yards will be so reduced that if furnaces are able to operate at a fairly good percentage of capacity, the demand for ore will show great improvement over that for this year. Owing to the reduction in freight rates by the Minnesota railroads, the adjustment of ore prices for 1912 will have unusual complications.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—During the past week, more iron has been sold in the Cleveland district than in any similar period in many months. The sales of foundry grades have aggregated from

15,000 to 20,000 tons and every manufacturing city in northeastern Ohio, including Canton, Massillon and Mansfield, has been represented in the buying. A fair tonnage has been taken by engine builders of Erie, Pa. Firms having a number of furnaces in different states have also made large sales. Prices, however, are low. The general selling price is about $13, furnace, for No. 2 foundry, at furnaces located in Cleveland, Buffalo and the valleys. One Cleveland firm has quoted as low as $12.50, furnace, for No. 2 foundry for shipment to distant points in the state, but for delivery in Cleveland, $13, delivered, is the minimum quotation. An inquiry from a Canton steel company for 1,000 tons of basic for prompt delivery is considered an encouraging indication, as this company had covered for what was supposed to be its requirements for the remainder of this year. There is strong evidence that the recent purchase of the American Steel Foundries for its Alliance plant was made on a basis of $12.15, valley, or $12.80, delivered. The minimum price now seems to be $12.35, valley.

No. 1 foundry	$13.50 to 13.75
No. 2 foundry	13.00 to 13.25
No. 2 southern	14.00 to 14.35
Gray forge	12.50
Bessemer	15.15
Lake Superior charcoal	16.50
Jackson Co. 8 per cent silvery	17.05

Coke.—The market continues very quiet, but prices are firm. There is some buying by foundries for immediate needs.

Connellsville furnace coke, $1.50 to $1.55 for prompt delivery, and $1.60 for last quarter; Connellsville foundry coke, $1.90 to $2.00 for prompt, and $2.15 to $2.35 for first quarter.

Finished Material.—While sentiment continues strong and specifications are satisfactory, prices are still low. Structural shops are not busy and reports of shading on plates are current. Keen competition continues in wire, but reports of extremely low prices cannot be confirmed and the most important sellers are very cautious about making contracts, the disposition being to sell at present prices for prompt or very early delivery only. The board of city hall commissioners, Cleveland, has extended until Dec. 13 the time for taking bids on from 700 to 800 tons of steel on the new city hall.

Old Material.—Local consumers of heavy melting steel are showing more interest in the market, and the price has advanced 25 cents a ton, the prompt stock apparently being somewhat limited. Borings and turnings are being taken by mills and their price has also risen slightly. On the whole, the general market tone is a little more cheerful. We quote, gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$14.00 to 14.50
Old steel rails (under 6 ft.)	12.75 to 13.00
Old steel rails (over 6 ft.)	12.75 to 13.00
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	11.50 to 12.00
Steel axles	18.00 to 18.50
Axle turnings	8.50 to 9.00
Malleable iron (agricultural)	10.75 to 11.25
Heavy steel	11.25 to 11.75
Country mixed steel	9.75 to 10.25

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 1 busheling	9.50 to 10.00
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	6.75 to 7.00
Pipes and flues	8.50 to 9.00
Wrought drillings	7.00 to 7.25
Stove plate	9.00 to 9.50
Cast borings	6.50 to 7.00
Wrought iron piling plate	15.50 to 16.00
Wrought iron arch bars	15.50 to 16.00

CINCINNATI

More Activity in Pig Iron, But Prices Are Unsteady.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., Nov. 28.

Pig Iron.—The large southern Ohio steel interest that was in the market some weeks since and then withdrew its inquiry has again come forward for from 10,000 to 15,000 tons of basic. A malleable concern of northern Ohio is inquiring for 1,700 tons of malleable, an Indiana plant is asking quotations on 1,000 tons of southern analysis, and a melter in Michigan territory wants 1,000 tons of foundry grades. A local melter is in the market for 600 tons of northern and southern grades for prompt delivery. In addition to these inquiries, there are a number averaging several hundred tons each, indicating that a fair tonnage is in prospective demand, with a number of sales of various tonnages. The general tone of the market thus evidenced is slightly better and indicates more activity than that of a week or two ago. Prices, however, are said to be holding only fairly well and there is scarcely a doubt that quotations have been shaded 25 cents per ton on both northern and southern brands. It is stated, however, that as a general proposition, southern furnaces are endeavoring to maintain the $10 quotation, presumably with indifferent success. The indications are that northern furnaces have sold considerably more iron during the past few months than was supposed, and the situation so far as they are concerned is said to be satisfactory. A large cast iron pipe interest is said to have bought quite heavily of various grades recently, and is now figuring on additional tonnage. A central Ohio melter bought 600 tons of northern and southern grades for prompt delivery. Judging from conditions, it looks as though the majority of local melters are fairly well covered into next year, the buying, however, having been done quietly, and not generally known. Freight rates from Birmingham $3.25 and from Ironton $1.20. We quote as follows:

Southern foundry No. 2	13.00 to 13.25
Southern foundry No. 3	12.75 to 13.00
Southern foundry No. 4	12.50 to 12.75
Southern gray forge	12.25 to 12.50
Mottled	12.25 to 12.50
Southern No. 1 soft	14.70 to 15.20
Southern No. 2 soft	14.20 to 14.70
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—There are several inquiries for foundry coke aggregating perhaps a dozen cars per week, now pending that will probably be closed during the next few days. Foundry demand is very quiet and little is moving aside from regular contract shipments, which, however, are in prompt demand. Prices are moderately firm, and from the leading coke producing districts are as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.55 to 1.65	1.75 to 1.90
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.10	2.00 to 2.10
Furnace coke	1.50 to 1.75	1.60 to 1.75
New river		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Specifications along finished lines have been fairly good, according to some agencies, while others report very little doing. Local structural demand is light and trade is quiet. Work on the Gilbert avenue viaduct is progressing slowly, and it will be some months before completion. Steel bars are openly quoted at 1.10c, which appears to be the prevailing price, although there are reports that sales have been made at a lower figure.

Old Material.—There has been no change in the situation and the market is dull and trade light. Dealers say that while offerings are light,

sales are not keeping pace, and the result is an accumulation of stocks on yards. Prices are more or less irregular and vary according to circumstances. As closely as can be ascertained, they are about as follows:

GROSS TONS.

Old iron rails	$12.00 to 13.00
Old steel rerolling	11.00 to 11.50
Old iron axles	18.00 to 18.50
Steel melting scrap	9.50 to 10.50
Car wheels	10.50 to 11.00

NET TONS.

Old No. 1 R. R. wrought	$10.50 to 11.50
No. 1 machinery	10.00 to 10.50
No. 1 busheling	8.00 to 9.00
Stove plate	6.50 to 7.00
Machine shop turnings	5.50 to 6.00
Cast borings	4.50 to 5.00
Grate bars	6.00 to 7.00
Sheet iron bundled	6.50 to 7.50
No. 1 cast scrap	10.00 to 10.50
Heavy turnings	6.00 to 7.00

PHILADELPHIA

Active Demand for Foundry Iron—Finished Improvement Slow.

Pig Iron.—Accumulating tonnage is before eastern sellers through the sustained appearance of an active inquiry. The tonnage in the aggregate is quite heavy, probably 30,000 tons being under active negotiations in the Philadelphia district. As practically the entire amount is in foundry and forge grades, and steel making irons are dull, no pronounced encouragement is manifested among makers and plans are still in mind for the blowing out of additional furnaces. Sales are quite numerous and aggregate a fair tonnage. A stove maker in this city has taken 2,000 tons of No. 2X for forward shipment, dividing the business between eastern and central Pennsylvania makers. A car company bought 1,000 of No. 2X for first quarter shipment to an eastern plant. A Delaware river pipe maker took 3,000 tons equally divided between No. 3 and gray forge for February shipment. A considerable part of this tonnage is understood to have gone to southern makers at $9.25, Birmingham, or $13.45, delivered, for forge. The leading cast iron pipe interest has included in a heavy purchase of southern iron made this week, 5,000 tons or more of No. 3 and 4 for delivery to its Burlington, N. J., plant in this district. This iron was purchased at $9.25, Birmingham, for No. 4 and $9.50 for No. 3, or $13.45 to $13.70, delivered. Northern furnaces in this district were offered part of this business at $13.75, delivered, but declined it. Another cast iron pipe maker in the Delaware river district is inquiry for 5,000 tons of No. 3 for shipment over the rest of the year and up to April. The Baldwin Locomotive Works is in the market for 2,500 to 4,000 tons of No. 2X and 2,000 tons of a low silicon No. 3 for first half shipment. The Pennsylvania railroad is inquiring for 1,000 to 2,000 tons of low silicon iron and from 500 to 1,000 tons of No. 2 foundry for first quarter delivery at Altoona. The General Electric Co. has put out an additional inquiry for 5,000 tons of its No. 1, 2 and 3 analysis grades for first quarter shipment at Schenectady and Pittsfield. With other inquiries outstanding, this company now has pending about 7,000 tons. The Norfolk & Western Railroad is still inquiring for 4,000 tons of charcoal and car wheel iron for delivery at Roanoke, Va. Eastern Pennsylvania brands of No. 2X foundry continue to be held at $15 to $15.25, Philadelphia. At Central Pennsylvania points, the $14.75, delivered, quotation is more numerous. Virginia iron continues to sell at $12.25, furnace, for No. 2 for the remainder of the year and first quarter shipment. There have been some delays in the delivery of some of the southern basic recently sold to eastern steel works at $14.25, delivered, and this has occasioned some small filling-in buying from northern furnaces. One consumer took 200 tons for immediate shipment at $14.25, delivered, but the amount of metal available at such a level is very limited. Basic users in general still show no interest in the market. Small sales of late of malleable Bessemer have been made in the Philadelphia district at $15.65, delivered. On standard low phosphorus, $19.50, Philadelphia, is usually asked, but this price could be shaded 25 cents on a desirable order. The Keystone furnace of the Reading Iron Co. has gone in after re-lining. We quote, delivered at Philadelphia and vicinity, for prompt and first quarter shipment, as follows:

No 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 14.75
Standard gray forge	14.25 to 14.50
Basic	14.25 to 14.50
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.00 to 14.50
Standard low phosphorus	19.25 to 19.50

Finished Materials.—Evidence of but little improvement among eastern steel makers is as yet reflected in the new business being entered or by the rate of current mill operations. Some betterment of tonnage is noted with individual companies, but on the whole the manufacturers are still waiting for a more pronounced buying movement. The more favorable reports from the Pittsburg and Chicago districts continue to lend encouragement to sentiment in the east, as it is felt that only through an increased tonnage will come the disappearance of the present low prices which are a source of much dissatisfaction to makers and which in some cases are being met less vigorously by eastern plants. Some tonnage for car building has been placed with eastern makers, but this has been only a slight proportion of the heavy tonnage recently needed, since most of the large equipment orders just placed are to be filled at western plants. Finished prices are generally firmer in the east in that the minimums recently quoted are being confined more generally to prompt shipment. As a rule, the mills are still resisting the making of forward contracts at present prices and some of them have placed Jan. 1 as the forward limit of today's quotations. At the same time, instances are still to be noted, where contracts for first half, particularly in structural shapes, have been taken by mills in the Pittsburgh district at 1.10c, Pittsburgh. These contracts are generally explained as applying to requirements for work already under contract and to be completed within the period covered. In plates, some selling at 1.35c, Philadelphia, or 1.20c Pittsburgh, by eastern mills is noted with slightly higher prices on smaller lots. The general quotation on structural shapes in the east remains about 1.30c, delivered, or 1.15c, Pittsburgh, though lower is sometimes done. Steel bars are quotable at 1.20c for early shipment and 1.25c for forward shipment. Bar iron is unchanged. Eastern makers of open-hearth billets are inclined to hold for more than $19, Pittsburgh, but only in occasional cases are they able to obtain this price.

Considerable interest has been aroused by the announcement that the Pennsylvania railroad had plans laid for the purchase of a large number of cars. This number, it is understood, has been fixed upon at about 20,000, which will represent purchases to be made for the years 1911, 1912 and 1913. For early delivery about 7,000 cars will be ordered. Both the Reading and the Pennsylvania have been buying a fair amount of plain material. There is some trading in railroad spikes, one sale of 1,000 kegs being noted.

The American Bridge Co., it is announced, will furnish the 2,100 tons required for the Pennsylvania Bridge Co. over the Susquehanna river near Williamsport, Pa. The Pennsylvania

Steel Co. was originally announced as the low bidder and the probable recipient of this award. There seems to be little doubt but that the American Bridge Co. will also get the 4,000 tons for the building for the bureau of printing and engraving at Washington, upon which it has submitted the low steel bid to contractors. The Butler Brothers Construction Co., New York, is the low bidder on the Dock street pier, this city, about 1,000 tons. Bids went in the past week on about 4,500 tons for the extension to the Baldwin Locomotive Works at Eddystone, Pa. No decision has yet been reached on the 1,800 to 2,000 tons for the Philadelphia stock exchange or for 1,600 to 1,800 tons for the Spreckles Sugar Refining Co. warehouses, this city. An office building at Washington, 400 tons, is still pending. Bids are about to come out for the Manufacturers' Club, this city, which it is estimated will require 1,500 to 1,800 tons. We quote, delivered in Philadelphia vicinity, as follows:

Structural shapes, 1.30c to 1.35c; steel plates, 1.25c to 1.35c; steel bars, 1.20c to 1.25c; common bar iron, 1.20c to 1.25c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage, 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $21.40 to $22.40; forging billets, $26.40 to $27.40. Extras shown under Pittsburg report.

Old Material. — Sentiment in the scrap trade is more cheerful than expected, but there is an absence of sizable transactions to definitely determine the range values of the leading grades. None of the eastern consumers are buying very heavily, but where steel works have sounded the market on first class heavy melting steel, they have found difficulty to obtain much material at $12, delivered. The railroads have recently received better offers for their material and in some cases tenders of $12.10, delivered, brought little tonnage to the bidder. The market appears to present a stationary situation, which would probably be converted into an advance by any extensive buying. We quote gross tons delivered in eastern Pennsylvania and New Jersey consuming territory, as follows:

Old iron rails	$15.00 to 15.50
Old steel rails (rerolling)	12.75 to 13.50
No. 1 heavy melting steel	11.75 to 12.25
Old car wheels	11.25 to 11.75
Old iron car axles	21.00 to 22.00
Old steel car axles	16.50 to 17.00
No. 1 R. R. wrought	13.75 to 14.25
Wrought pipe	10.75 to 11.25
Cast borings	7.50 to 8.00
Wrought turnings	8.25 to 8.75
Heavy cast scrap	12.50 to 12.75
Railroad malleable	11.25 to 11.75
Stove plate	9.25 to 9.75

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

ST. LOUIS

Increased Sales of Pig Iron at Reduced Prices.

Nov. 27.

There is a good buying movement on in pig iron in the St. Louis territory, and local agents are wondering if it has come to stay or whether the purchasers are merely those who have stayed out of the market until their stocks have become exhausted. Prices are low, and no one seems willing to venture whether they will remain so or advance. Inquiries totalling 6,000 tons of southern iron are in the market, and there is serious talk that a tonnage of very large proportions may be placed soon.

Sales last week were heavier than they have been for some time, and a new record for low prices is said to have been made, lower, in fact, than has been made in many years. The following sales were made last week: Northern foundry and basic iron, 10,500 tons, all going to the plants of a large car and foundry company in East St. Louis and Madison, Ill., and St. Louis, on a base of $15, East St. Louis, which would mean $12, valley, $12.50 southern Ohio furnaces, and $13.50, Chicago. This is said to be the lowest price made in the St. Louis territory for a long period of years, but the furnaces selling the iron are not announced. Southern iron, 2,000 tons, sold for first quarter delivery at $9.75, Birmingham, basis; 1,000 tons at $10, Birmingham, for first half delivery; and 2,000 tons malleable, first quarter, on which a price of $15, delivered, is said to have been made. Southern No. 2, 3,000 tons for first quarter delivery, at $10, Birmingham basis. An order was turned down today for 1,000 tons of Southern No. 2 at $10, Birmingham, because the furnace refused to ship at that price.

Our tabulated prices for southern iron delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$14.00 to 14.50
Southern No. 2	13.50 to 13.75
Southern No. 3	13.25 to 13.50
Southern No. 4	13.00 to 13.25

Coke.—There is considerable inquiry for coke, and one sale is known to have been made this morning of 3,000 tons of by-product coke for first half delivery.

Our prices remain as follows:

We quote 72-hour Connellsville foundry grades, $1.90 to $2.40 for whole of 1911; 72-hour foundry, $1.90 to $2.15 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.40 to $1.50; best 72-hour Virginia foundry, $2 to $2.25; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—Two very large office buildings, each of which will require a good tonnage of structural steel, are in a fair way to materialize in St. Louis, but nothing has been done as yet toward letting the contract. A local car company today received an order for 1,500 additional steel underframe box cars for the Missouri Pacific Railroad Co.

Old Material.—The outlook for scrap iron is believed to be brighter, but transactions last week were very few and for small purchases. Our prices remain as follows:

GROSS TONS.	
Old car wheels	$12.50 to 13.00
Old iron rails	13.00 to 13.50
Re-rolling rails (5 feet and over)	11.75 to 12.25
Old steel rails (3 feet and under)	10.25 to 10.75
Light section relayers (45 lb. and under, subject to inspec..	19.00 to 21.00
Re-laying rails, subject to inspec.	23.00 to 23.50
Frogs, switches and guards	10.00 to 10.50
Heavy melting steel	10.00 to 10.50
Shoveling steel	9.50 to 10.00
NET TONS.	
No. 1 railroad wrought	$10.00 to 10.25
No. 2 railroad wrought	9.00 to 9.25
Arch bars and transoms	13.00 to 13.50
Knuckles, couplers and springs	9.00 to 9.50
Shafting	13.00 to 13.50
Iron car axles	16.50 to 17.00
Steel car axles	14.00 to 15.00
Locomotive tires	14.00 to 14.50
No. 1 country wrought	8.50 to 8.75
Pipe and flues	7.00 to 7.25
Tank iron and cut boilers	6.75 to 7.00
No. 1 cut busheling	8.00 to 8.50
No. 2 cut busheling	5.75 to 6.00
Cast and mixed borings	5.00 to 5.25
Machine shop turnings	6.00 to 6.50
Railroad malleable	9.00 to 9.50
Agricultural, malleable	8.00 to 8.50
Stove plates	8.50 to 9.00
Angle splice bars (iron)	10.00 to 10.50
Angle splice bars (steel)	9.00 to 9.50

BUFFALO

Fair Tonnage of Pig Iron Sold.—Shipments are Satisfactory.

Buffalo, Nov. 28.

Pig Iron.—The change in the market over last week is very slight, if anything, the prices remaining about the same for local delivery, but reports indicate shading for delivery at distant eastern points. The estimated bulk sales for the week may be safely put at 18,000 tons, as against 25,000 for last week. The majority of the orders placed have been for

nearby shipment, with a few for the first quarter. Shipments from the furnaces are being made at an exceedingly gratifying rate, with the stocks on the furnace yards being reduced as steadily as was reported last week. With the general situation a little quieter, and the absence of the appearance of active buying, it is fair to assume that prices being low and the customers running closely on stocks, a period of activity in purchasing will begin to develop before many weeks have passed. The Buffalo prices for the week, f. o. b. furnace are substantially:

No. 1X foundry	$13.50 to 13.75
No. 2X foundry	13.25 to 13.50
No. 2 plain	13.00 to 13.50
No. 3 foundry	13.00 to 13.25
Gray forge	13.00
Malleable	13.50 to 14.00
Basic	13.50 to 14.00
Charcoal	16.00 to 17.25

Finished Material.—A considerable tonnage of material in structural bars and plates was ordered during the week for deliveries during the first quarter of 1912, as the result of the last week's review of the market. The tone of the market shows a shade of improvement over that of the past few weeks. The contract for 1,800 tons for the Edwards building, Rochester, N. Y., went to the American Bridge Co. at a ton price of $36 delivered. The same company also secured the contract for the structural steel, about 2,000 tons, for the Seneca building of the New York Telephone Co., at Buffalo.

Old Material.—The dealers in scrap for this territory report a better feeling and an improved tone in the market. Shipments are being accepted readily on old contracts, and the situation looks better than it has in weeks. The sales have not been large to individual purchasers, as most of the users of old material from this district stocked heavily on the low prices of six months ago. Buffalo being a producing territory for old material rather than a user, the prices here are governed by the demand from outside. The inquiries of the week have been confined chiefly to the specialties. The gross ton prices, f. o. b. Buffalo, are substantially as follows:

Heavy melting steel	$12.00 to 12.50
No. 1 railroad wrought scrap	12.00 to 12.50
No. 1 railroad and machine cast scrap	12.25 to 12.75
Old steel axles	18.50 to 19.00
Iron axles	20.00 to 21.00
Car wheels	12.50 to 12.75
Railroad malleable, scrap	11.75 to 12.50
Machine shop turnings	6.50 to 6.75
Cast iron borings	6.25 to 6.50
Low phosphorus steel scrap	15.00 to 15.50
Old iron rails	14.50 to 15.00
Tank iron	9.50 to 10.00
Boiler plate, sheared	13.00 to 13.75
Pipe and tank	9.00 to 9.50
Stove plate	9.50 to 10.00
Sheet iron	6.50 to 7.00
Grate bars	11.00 to 11.50

NEW YORK

Very Large Tonnages of Southern Iron Sold at Low Prices.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Nov. 28.

Iron Ore.—Slowing down in shipments this month is reported by several of the representative shippers of local ores, this reduction being due to the lower scale of operations among eastern Pennsylvania furnaces. The foreign ore movement also continues light. There is little inquiry for ore and the market is sluggish .

Pig Iron.—Featured by the heavy purchases of southern iron, the pig iron market continues to manifest a substantial movement at different consuming centers. Some iron sellers, with offices in all important markets, report total sales this month are practically 50 per cent better than in October, and this tonnage is practically all foundry grades. It is estimated on high authority that sales of southern grades during the past week have reached from 175,000 to 200,000 tons and much of the tonnage was transferred on a basis of $9.75, Birmingham, for No. 2, $9.50 for No. 3 and $9.25 for No. 4, although $9.50 for No. 2 was done in some cases. Of this heavy selling one leading southern maker disposed of about 120,000 tons and another 40,000 tons. Leading consumers are numbered among the buyers. The United States Cast Iron Pipe & Foundry Co. took 35,000 tons of Nos. 2, 3 and 4 foundry for shipment at its different plants north and south and the International Harvester Co. is credited with a purchase of 15,000 to 20,000 tons of foundry. A heavy tonnage of southern basic estimated at 60,000 to 70,000 tons, is included and a considerable tonnage of this grade is understood to have gone to American Steel Foundries for St. Louis delivery and to other steel plants in the middle west. In the metropolitan and adjoining districts, an active demand for foundry iron has continued. The General Electrical Co. has closed an inquiry of 5,000 tons of its No. 1, 2 and 3 analysis for first quarter shipment to Pittsfield, and Schenectady, put out this week and has come out in the past few days with an additional inquiry of 6,000 tons of the same grades for the same plants. A Paterson, N. J., consumer is inquiring for 1,800 to 3,600 tons of No. 2X for first half of first quarter. A Connecticut valve interest is out for 500 to 1,000 tons of No. 2X and 500 to 1,000 tons of high silicon iron for early shipment. A Newark, N. J., consumer is still out for 1,000 tons of No. 2X for first half and another buyer in that territory has brought out an inquiry for 500 to 1,000 tons of No. 2X for first quarter or first half. Consumers are still making efforts to break the prices asked by the furnaces, but with some exceptions the market is holding firmer. New Jersey consumers at tidewater have been endeavoring to buy northern No. 2X at $14.50, delivered, while the furnaces are asking $14.75, delivered. For New England shipment, Buffalo makers continue to hold at $13.00 for No. 2X or $15.45, delivered, but the latter price is being shaded on some brands, principally by Pennsylvania makers. That buyers are endeavoring to close at very low prices is to be noted from an offer of $14.75, delivered, for 2,000 tons, made by a New England interest to an eastern maker, which was declined. Virginia iron continues quotable at $12.25, furnace, for No. 2 for prompt and first quarter. Sales of the week have been quite liberal, the heaviest lots being placed by eastern pipe makers. A portion of the large tonnage by the leading pipe interest of southern iron will come to its eastern plant. On lower grades of northern pipe iron, $14.00 is generally asked, but makers have refused offers of $13.75, delivered. The Alburtis furnace of the Thomas Iron Co. is going out and the Island Park furnace of the same interest is about to retire. We quote for prompt and first quarter shipment at New York tidewater as follows:

Northern foundry No. 1	$15.25 to 15.50
No. 2X foundry	14.75 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.25 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.25 to 14.50

Ferro-Alloys.—Steel works east and west have put out in the past few days from 750 to 1,250 tons of new inquiry for ferro-manganese for first quarter and first half and there is now pending in the market probably 4,000 tons, some of which is inactive because consumers are still reluctant to pay the $38.50, seaboard, price asked by makers. This tonnage includes, in addition to the inquiries just put out, 500 tons for an Ohio maker, 500 tons for St. Louis, 300 tons for an eastern plant and about 1,500 tons scattering. Some carload sales of ferro-manganese at $38.50, seaboard, have been made, but such transactions are rare and consumers still avoid this price. Domestic makers of 50 per cent ferro-silicon have posted another advance in their product to $68, Pittsburgh or Philadelphia. Foreign makers have withdrawn some of their recent prices and are reluctant to quote because the Turkish-Italian war conditions are affecting the Mediterranean freight movement. Several hundred tons of inquiry from

eastern buyers is pending. We quote 80 per cent ferro-manganese at from $38 to $38.25, Baltimore, and 50 per cent ferro-silicon at from $66 to $68, Pittsburgh or Philadelphia.

Cast Iron Pipe.—The Consolidated Gas Co. of New York has placed 15,500 tons of 48-inch and smaller pipe for spring shipment, which was recently inquired for and the business is understood to have gone to the United States Cast Iron Pipe & Foundry Co. The city of Portland, Ore., is inquiring for 12,000 tons of pipe in sizes running from 6 to 20 inches. Several additional inquiries, aggregating 4,000 to 5,000 tons, have been put out by water and gas companies for spring shipment and the market is active in this class of buying. The inquiries of the United Gas Improvement Co. for 4,100 tons and of the Brooklyn Union Gas Co. for 3,600 tons are still pending. Washington, D. C., took bids this week on 1,207 tons of 8-inch pipe. The recent larger sized buying has given the market a better tone. We quote 6-inch pipe in carload lots at from $21 to $22, delivered, f. o. b. New York.

Finished Material.—Prices for finished products are firmer in that makers are more strict in limiting the forward periods for which they are acceptable. There is still some buying at the recent minimum quotations, but these are generally being held to early shipments and contracts on these levels are not being freely accepted. Some forward contracts which have been accepted at the present minimum prices are understood to cover requirements actually on hand incurred at the present depressed level of prices in other manufacturing lines and which will be completed within the period of these committments. Fair prices relatively are being received on the smaller lots business. Plate makers are entering orders at 1.36c New York or 1.20c, Pittsburgh, for carloads and 1.41c for less than carloads. Shapes are quotable at from 1.31c to 1.36c New York and steel bars at from 1.21c to 1.26c, New York. Some low prices on sheets are reported from New England territory, where 1.40c, Pittsburgh for No. 10 gage blue annealed has been shaded. Some cases of very low fabricated quotations continue to appear.

In general, the volume of new business entered in the eastern market displays no marked increase, but sentiment is increasingly cheerful. Some good sized structural awards are being made, but a large tonnage has accumulated in the metropolitan district, upon which action continues slow. In subway work, the American Bridge Co. has taken about 17,500 tons additional from the contractors for the Lexington avenue line. These include section 15, calling for about 8,000 tons awarded by the Hagerty-Drummond Co. and about 9,500 tons for section 13, the general contract for which is held by the Bradley Construction Co. In addition, about 2,000 tons of steel bars will be required for section 15, and the award for this has not been announced, although it will probably go to the leading interest. These estimates of the steel requirements may be finally changed by revisions in the plans. The American Bridge Co., it is also officially announced, has taken 4,000 tons for the building for the bureau of printing and engraving at Washington, which has previously been credited to it. Levering & Gerrigues have 4,600 tons for the Hyde loft at Twenty-fifth street and Madison avenue, this city and the New England Structural Co. 1,100 tons for the Y. M. C. A. building at Boston. I. S. Rossell, of this city, is the general contractor on the Seneca building, Buffalo, 2,000 tons, and F. D. Nesbit & Co. are the general contractors for a building for the New York Edison Co., 350 tons. Plans are out for the Hotel Allen, Hartford, Conn., 1,500 tons, upon which Bethlehem sections have been specified.

Railroad inquiries are not very plentiful. The Chesapeake & Ohio has asked prices on bridge work aggregating about 2,500 tons and the New York Central has put out plans for a viaduct and another section of its terminal improvements in this city, which will require several thousand tons. Bids will shortly be asked for 5,000 to 6,000 tons for the Michigan Central railway station at Detroit, plans for which are being drawn in this city. We quote delivered at New York tidewater as follows:

Plain structural shapes, 1.26c to 1.36c; tank plates, 1.26c to 1.31c; steel bars, 1.21c to 1.26c; common iron bars, 1.25c; plates and shapes from store, 1.70c to 1.80c. Extras shown under Pittsburgh report.

Old Material. — The old material market manifests no apparent changes and while sentiment among the holders of scrap is stronger, tonnage sales from eastern consumers are still lacking. The owners of scrap are holding to their material more firmly and there is evidence that buyers are not able to put through low offers as freely as they were several weeks ago. Prices are practically unchanged. We quote, gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$ 9.75 to 10.00
Old iron axles	18.00 to 18.50
Old steel shafting	13.50 to 14.00
No. 1 heavy melting steel	9.50 to 10.00
No. 1 R. R. wrought	11.50 to 12.00
Iron track scrap	11.00 to 11.50
Wrought pipe	9.00 to 9.25
Cast borings	5.75 to 6.25
Heavy machinery cast	11.50 to 12.00
Railroad malleable	9.00 to 9.50
Stove plate	8.00 to 8.25
Grate bars	6.25 to 6.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York.

BIRMINGHAM

The $10 Quotation Advanced to Except for Large Tonnage.

Nov. 27.

Pig Iron.—Sentiment in this market continues to improve, and prices for prompt deliveries are no doubt firmer. An aggregate of 7,000 to 10,000 tons for delivery extending well into the first half was sold by local interests during the past week, and in but few instances is it believed that a $10, Birmingham, schedule was shaded. The transactions reported involved three lots of 1,000 tons each; a single lot of 650 tons; four lots of 500 tons each, and carloads and lots of 50 to 100 tons each. For the small lots a $10 price has been fully maintained, the only shading known to have been obtained having been for a round tonnage of analysis iron for delivery during the next 90 days. There is now a tendency among the producing interests to limit commitments at the $10 schedule to prompt and first quarter shipments only, and those concerns which have not as yet entered the market for first quarter deliveries still refuse to offer such tonnage. It is understood that the active capacity of one large producing interest is well taken care of with orders, booked for shipment in the first half, and in another case that the production during the remainder of this year has been sold. Of the inquiries pending at this time, the requirement of the cast iron pipe interests is the chief consideration. A good portion of the tonnage sold during the past week went to such concerns as just mentioned, although local machine shop foundries were well represented. Further indication of the scarcity of low grades is offered

in the shape of prohibitive asking prices adhered to by certain producing interests. The accumulation of all grades below No. 3 foundry is small comparatively and commitments against the future output are made with reluctance generally. In the basic market, no transactions have recently been recorded to afford an accurate statement as to just what can be done. It is known that a large tonnage from the northern market was recently refused by local producers owing to extremely low prices offered. At this time the local make of basic iron is being consumed at the local mills and as a result, that particular grade does not figure in summarizing market conditions. We quote foundry iron for prompt delivery and shipment in the first quarter, as follows per gross ton f. o. b. cars here:

	Per ton.
No. 1 foundry	$10.50
No. 2 foundry	10.00
No. 3 foundry	9.50
No. 4 foundry	$9.25 to 9.50
Gray forge and mottled	9.00 to 9.25

Standard southern basic is quotable at $10 to $10.25 at Birmingham furnaces, with off basic quotable at $9.75 to $10.

METAL MARKETS

St. Louis

Nov. 27.

Lead and Zinc.—The highest price of the year was obtained for zinc blende in the Missouri-Kansas-Oklahoma district last week, offerings going at $50.59 for 60 per cent qualities at contract basis. This price was figured on the spelter average at East St. Louis for the previous week, which was 6.47c. In the open market, zinc blende advanced to $47 on a base of 60 per cent metallic zinc. The highest price obtained in the open market was $50, with choice lots selling at $53 a ton. Second grades of blende brought $48 a ton. Calamine remained in good demand at $24 to $28 a ton for 40 per cent metallic zinc grades, with choice lots selling as high as $35 a ton. Lead ore sold at $56 to $58 a ton. All markets are strong at East St. Louis today.

Chicago

Nov. 28.

New Metals.—High prices continued to rule during all of last week. There were fair purchases of copper and lead. Spelter advanced $2 a ton during the week and is now at the highest point it has been in years. Lead is also higher and is now quoted 4.32½c to 4.35c, Chicago.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 13c; casting, 12⅝c to 12¾c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.55c; lead, desilverized, 4.32½c to 4.35c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8.50 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 45½c. Cookson's antimony, 9¼c; other grades, 8¼c to 8¾c.

Old Metals.—Although the old metal market continues quiet, prices show some firmness on account of the better market for new metals. Melters of old brass and copper are not disposed to pay quotations much in advance of current figures.

We quote the market, for Chicago delivery, as follows:

Copper wire, crucible shapes, 11c; copper bottoms, 9¾c; heavy cut crucible copper, 11½c; heavy red brass, 10c; heavy yellow brass, 8½c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; lead pipe, 4c; zinc scrap, 4.60c; scrap aluminum, 12c; tea lead, 3¾c; No. 1 pewter, 28c; block tin pipe, 37c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $88 to $90 a ton.

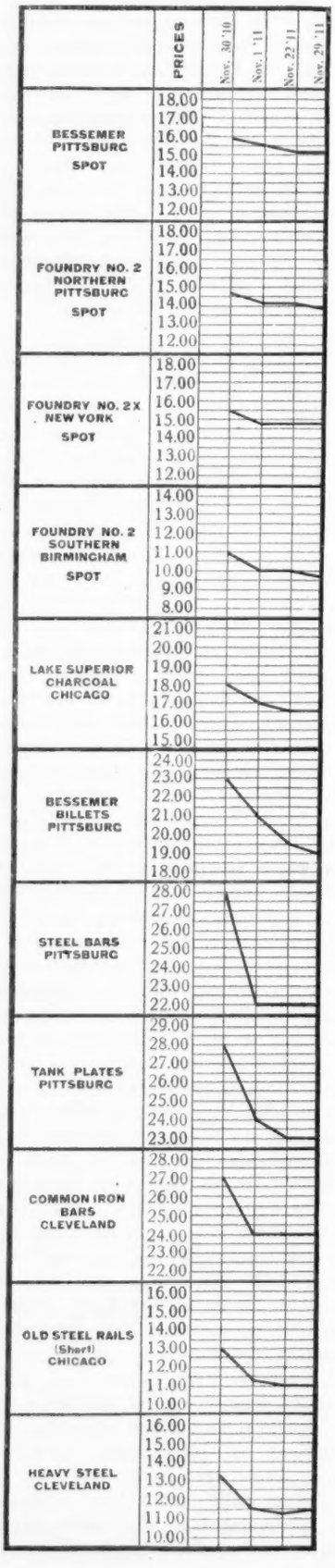
New York

Nov. 28.

Tin.—Consumers have bought a large amount of tin during the past week. Conservative estimates place the probable total of sales at close to 1,500 tons, most of which is believed was for consumption. The metal sold today at 45.20c for early delivery and is now slightly more than 1c per pound above the cost to import. The London market has advanced £4 15s in spot and £2 5s in future, since Nov. 21. Awards since Nov. 1, aggregate only 2,204 tons, and there are 1,330 tons afloat.

Copper.—All important sellers of copper metal have advanced prices, and there is decidedly more confidence felt in the stability of the improved prices. Electrolytic is generally quoted at 13.25c cash New York and 13.37½c, delivered 30 days. The prediction is made by some well informed persons, that the price will reach 14c in the near future, and continue very much higher during the early part of next year. Copper exports since Nov. 1 are 25,250 tons.

PRICE CHART



GREAT INCREASE

Proposed in Use of Steel in Car Construction.—Plans of Pennsylvania Railroad.

Plans which provide for a tremendous increase in the capacity of steel freight cars, have been formulated by the engineers of the Pennsylvania railroad. The recommendations, considered at a meeting of Pennsylvania officials at Pittsburgh, Tuesday, Nov. 28, were recently submitted to large shippers in that district and almost without exception met with their hearty approval. The new gondolas and hoppers are to be 52 feet long overall and 50 feet, 2 inches inside. The hoppers will have a capacity for carrying 93,000 pounds of coke against 60,000 pounds, the capacity of the largest cars now in use. These cars will have a rated capacity of 140,000 pounds, but will be sufficiently strong to safely carry 160,000 pounds or 80 tons of material. This great increase in carrying capacity will necessitate the strengthening of all of the material entering into steel car construction. It will probably mean the entire elimination of the cast iron car wheels for freight service and the substitution therefor of solid steel wheels. The largest axles now rolled will be required and the size of the journal box will be increased to 6 x 11 inches, as compared with 5½ x 10 inches, the dimensions of the journal box now in use. Recently, the Pittsburgh & Lake Erie Railroad Co. placed in service 46-foot freight cars, which are the largest now in use. In addition to the strengthening of all car parts, including not only the wheels and axles, but also all forgings and castings entering into car construction, the reinforcement of many bridges to withstand the increased loads of these heavy trains will follow. Anticipating an increase in steel car carrying capacity, the Pennsylvania railroad has been strengthening all of its bridges on both its main line and branches.

It is estimated that approximately 25 tons of iron and steel will enter into the construction of these new cars against 20 tons required in the largest cars now in service. Heavier rails must also be used and the Central Railroad Co. of New Jersey has experimented for some months with 125-pound rails, which have been laid on an extensive stretch of track. The wooden tie will of necessity have to be replaced by steel ties and it is believed that a heavier tie than now manufactured will have to be used for the 125-pound rail. The adoption of this heavy section also presents a problem to the rail makers as only a few mills are equipped for rolling rails of this weight and an increase in demand for the 125-pound rail will necessitate the rebuilding of many mills.

Bruce-Macbeth Engine Co.'s Orders

The Bruce-Macbeth Engine Co., Cleveland, has recently booked a large number of orders for vertical, multi-cylinder, gas engines, including the following:

One 75-horsepower, four-cylinder, natural gas engine installed for the Olympic Theater, Pittsburgh.

One 115-horsepower and one 35-horsepower natural gas engine for the Harshaw-Fuller & Goodwin Co., Elyria, O.

One 35-horsepower, natural gas engine for electric lighting and storage battery work at the Prospect Garage, Cleveland.

One 55-horsepower engine for the Pittsburgh Steamship Co. at Conneaut Harbor, O.

One 55-horsepower engine, direct connected to triplex pump, at the plant of the Bellevue, O., water works.

One 300-horsepower, four-cylinder, producer gas engine for the Patapsco Electric & Mfg. Co.'s lighting plant, Catonsville, Md.

One 55-horsepower, natural gas engine for the Canton Lumber Co., Canton, O.

One 115-horsepower, four-cylinder, natural gas engine for the Prairie State Incubator Co., Homer City, Pa.

Two 135-horsepower engines for the Cameraphone building, Pittsburgh.

One 115-horsepower, four-cylinder engine for the Consolidation Coal Co., Inc., Fairmont, W. Va.

One 350-horsepower, natural gas engine for the Monongah Glass Co., Fairmont, W. Va. (Sixth order.)

One 35-horsepower engine for the Superior Drop Forge & Mfg. Co., Cleveland.

One 75-horsepower, producer gas engine for J. D. Manor & Co., New Market, Va.

One 75-horsepower, four-cylinder, natural gas engine for the Consumers Ice & Cold Storage Co., Lexington, Ky. (Second order.)

Two 75-horsepower engines for belting to generators, at the C. L. Flaccus Glass Co., Tarentum, Pa. (Fourth order.)

One 135-horsepower gas engine for the Exide Battery Depots, Inc., Cleveland. (Second order.)

One 65-horsepower engine for the Boston Consolidated Gas Co., Boston.

One 80-horsepower engine to the Perfection Spring Co., Cleveland. (Second order.)

The Van Dorn Iron Works, Cleveland, one 150-horsepower, four-cylinder natural gas engine.

One 300-horsepower natural gas engine, four cylinder, for municipal lighting plant at Canal Dover, O. (Second order.)

One 150-horsepower, natural gas engine, to the H. C. Fry Glass Co., Rochester, Pa.

One 250-horsepower, natural gas engine for the Hotel Southland, Dallas, Tex.

One 65-horsepower, twin-cylinder, natural gas engine for the Niagara Shoe Co., Buffalo.

New Rolling Mill

The Taunton-New Bedford Copper Co., New Bedford, Mass., which operates copper and yellow metal rolling mills, advises that it is erecting a new rolling mill, 125 x 350 feet, with a boiler room extension.

The Butler Co., Butler, Ind., manufacturing wire mills and tanks, is completing a new office building. Important additions to its manufacturing space have been made recently.

GOOD RESULTS

Obtained in Mine Exploring—Taxes Paid by Some Properties.

Marquette, Mich., Nov. 27.—The Nevada Land Co., controlled by the Longyear interests, is understood to have met with excellent success in its exploration of the old Mastodon property and adjoining lands in Section 13, 42-33, Menominee range.

Recent developments indicate that the Republic field of the Marquette range will be a busy district within the next few months. A number of tracts have passed into new hands latterly and are to be explored. The diamond drill will be employed extensively.

Due to the increased valuation placed on the Chapin mine by the Michigan state tax commission, the Oliver Iron Mining Co. will pay 70.7 per cent of the taxes levied at the city of Iron Mountain, Menominee range, this fiscal year. Other corporations will pay 10.2 per cent, and general property only 19.1 per cent. The shipments from the Chapin mine this season approximate 360,000 tons. This compares with 460,000 tons last year. To date this biggest of all Menominee range properties has forwarded 18,000,000 tons of ore. In each of six seasons, it has sent out upwards of 900,000 tons, its greatest annual outgo having been 956,000 tons. The mine is still able to produce at that rate, but for the past several years it has been operated materially under capacity.

The Richmond Iron Co., through M. A. Hanna & Co., of Cleveland, having protested to the Michigan state tax commission that the valuation of $179,000 recently given the Richmond mine in the Cascade district of the Marquette range was exorbitant, a rehearing has resulted in the assessment being substantially reduced. It was contended by the company that, while the deposit was of considerable proportions, the ore was of low grade and in slow demand.

St. Louis Shipments

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Slabs of zinc.	Pigs of lead.
Receipts:—		
For week end. Nov. 18.	94,720	34,440
For week end. Nov. 25.	70,010	35,790
Shipments:		
For week end. Nov. 18.	98,980	32,060
For week end. Nov. 25.	95,820	26,700

INDUCT PRESIDENT

At Coming A. S. M. E. Meeting—Many Interesting Papers.

The convention of the American Society of Mechanical Engineers, to be held in New York City, Dec. 5 to 8, inclusive, promises to be an unusually interesting one. At that time, four sub-committees, those on textiles, cement, machine shops and the administration of industrial establishments, will be ready to report and the results of their investigations will be presented to the society in the form of papers. The convention will be opened by introducing the new president on Dec. 5. The president for the coming year is Dr. Alexander C. Humphreys, president of Stevens Institute of Technology. Dr. Humphreys is also president of the Buffalo Gas Co. and of Humphreys & Miller, Inc., consulting engineers.

The papers to be read at the various sessions include the following:

"Oil Engines," by H. R. Setz.
"Test of an 85-Horsepower Oil Engine," by Forrest M. Towl.
"Design Constants for Small Gasoline Engines," by Wm. D. Ennis.
"Natural Gas Engine of 1,000 kilowatts: Tests, Construction and Working Costs," by E. D. Dreyfus and V. J. Hulquist.
"The Core Room: Its Equipment and Management," by Henry M. Lane.
"Tests of a Sand-Blasting Machine," by Wm. T. Magruder.
"Die Castings," by Amasa Trowbridge.
"Variable-Speed Power Transmission," by G. H. Barrus and C. M. Manly.
"Tests of Large Boilers at the Detroit Edison Co.," by D. S. Jacobus.
"Strain Measurements of Some Steam Boilers Under Hydrostatic Pressures," by James E. Howard.
"Herringbone Gears," by P. C. Day.

Algoma Steel Co. Orders Engine

Pittsburgh, Nov. 28.—Mackintosh, Hemphill & Co. have received an order from the Algoma Steel Co., Ltd., of Sault Ste. Marie, Ont., for a 36 x 42-inch three-cylinder, direct- connected reversing engine, for driving its new billet mill. This engine will be designed with the steam and exhaust piping arranged so that it can be operated either as a three-clinder high pressure, or by using one cylinder for high pressure steam and the two others low pressure, as a compound.

This particular type of engine was selected by W. C. Mitchell, general manager of the Algoma Steel Co., as being best fitted to meet special requirements. The engine and mill are to be used chiefly for rolling small billets from blooms and, therefore, must necessarily be run at high speed. The company wishes to avoid a shutdown in its operations during the period of taking out the old 30-inch blooming mill and the installation of its new 35-inch blooming mill and 55 x 60-inch direct-connected reversing engine, and desires to use the new equipment temporarily for rolling ingots down to rail blooms. In order to get the additional power required for doing this work, all three cylinders of the new engine will be run under high pressure steam. After the new 35-inch blooming mill is put in operation, it is the intention to run the engine on the smaller work.

Mackintosh, Hemphill & Co. having received the above order, a rare opportunity will be offered those interested to see under construction at one time three distinct types of direct-connected, reversing blooming mill engines, namely, the engine above referred to, a 55 x 60-inch twin-cylinder, direct connected reversing engine for the same people, which is to run in conjunction with a low pressure turbine of European make, and a 44 and 70 x 60-inch twin, tandem-compound condensing, direct-connected reversing engine for the Pittsburgh Crucible Steel Co.

This condition merits special attention, in that it shows the diversity of requirements to be met in modern rolling mill practice.

Plan to Build Works in Buffalo

J. H. Williams & Co., Brooklyn, N. Y., manufacturer of drop forgings, have purchased a tract of about 90 acres of land just outside the northern city limits of Buffalo in Tonawanda township. Plans are in view for the erection upon the site of a large modernly-equipped drop forging plant in which the company's manufacturing operations will eventually be concentrated. Details of construction of the new plant are now being worked out and the initial building work will begin about spring. The construction work will proceed gradually to accommodate the different departments of the plant which will be moved from time to time from the Brooklyn works, but it is not expected that the complete removal will have been accomplished before four or five years. Beyond the fact that the new works will be a practical duplicate of the present extensive Brooklyn plant, the details of construction are yet to be finally determined.

Stack No. 3, of the Haselton blast furnace group of the Republic Iron & Steel Co. was blown out the latter part of the week, preparatory to relining.

PIG IRON BOUNTY

Demanded by Manufacturers in Canada—Delegation Received.

Toronto, Nov. 23.—A strong delegation representing the iron and steel interests waited on the Canadian government yesterday and presented a demand for a bounty on pig iron, as a partial compensation for disabilities under which the industry is placed through the lowering of duties, exemptions and discriminations. The deputation included J. H. Plummer, of the Dominion Steel Corporation; T. Cantly, of the Nova Scotia Steel & Coal Co.; T. J. Drummond, of the Lake Superior Corporation; Cyrus Birge and R. Hobson, of the Steel Co. of Canada; and R. J. Mercur, of the Atikokan Iron Co. They were received by Premier Borden, Hon W. T. White, finance minister; Hon. Geo. E. Foster, minister of trade and commerce, and others. The government was urged to take up the whole case of the iron and steel industry, which it was claimed is at a disadvantage in Canada as compared with other countries. The pig iron bounty was asked for in the meantime as a temporary expedient to relieve the immediate situation. The question of restoring the bounty on steel rods was not taken up, being reserved for another occasion. The replies of the members of the government were, as usual, sympathetic, but non-committal.

March Steel Co. Incorporated

The March Steel Co., Cincinnati, was incorporated on Nov. 27, at Columbus, O., with a capital of $250,000. The concern is headed by Joseph C. March, manager of the National Metals Tempering Co., Cincinnati. No plans have yet been announced.

Manufacturers Protest

Seven hundred Michigan manufacturers, including the executives of most of the iron, steel and machinery concerns of the state, appeared before the special commission on tax inquiry, at Lansing, Nov. 22, to protest against the proposed corporate excess plan of taxation.

Stratton & Terstegge Co., Louisville, advises that the damage done by its recent fire was not serious, as most of it was due to water. A large force of men are rapidly repairing the plant, and it will resume full operation shortly.

PURCHASES UPSON CO.

Bourne-Fuller Co. on Jan. 1 Takes Over Cleveland Concern.

The Bourne-Fuller Co., Cleveland, iron, steel, pig iron and coke, is concluding negotiations whereby it will purchase the Upson Nut Co.'s properties both in Ohio and Connecticut. The negotiations have been under way for some time and have now reached the stage where the announcement is made that the Upson company's properties will pass into control of the Bourne-Fuller Co. on Jan. 1.

The Upson Nut Co. of Ohio has just been incorporated with nominal capital stock of $10,000. This company will take over all the properties of the Upson Nut Co. of Connecticut, being financed by the Bourne-Fuller Co. The latter company plans to increase its present capital stock of $150,000 to an amount commensurate with the final organization. Further details have yet to be decided upon, including the personnel of the final organization.

The Upson Nut Co. of Connecticut owns and operates a blast furnace at Cleveland with a capacity of about 90,000 tons annually; a steel plant in close proximity with four 60-ton open-hearth furnaces and blooming mill, billet mill and merchant mills which have previously been described in THE IRON TRADE REVIEW. The Upson company also operates extensive nut, bolt and rivet works both at Cleveland and Unionville, Conn. In Cleveland it also operates the American Box Co. The Upson steel works at Cleveland had just been completed when the founder and president of the company, Andrew S. Upson, died last spring. W. A. Hitchcock has been president since that time and F. H. Rose secretary and general sales manager.

The Bourne-Fuller Co. is one of the best known iron and steel houses in the middle west. It has for years represented leading firms in the Cleveland territory and the excellence of its sales organization has been very generally recognized. The officers of the Bourne-Fuller Co. are: President, B. F. Bourne; vice president, H. A. Fuller; treasurer, H. C. Bourne; secretary, L. H. Elliott; manager of sales, R. S. Hall. The company has as offices the eighth floor of the Hickox building, and its extensive warehouse is located at Lakeside avenue, corner of E. Fifty-third street.

While both the Bourne-Fuller Co. and the Upson Nut Co. have close affiliations with the Union Rolling Mill Co., also of Cleveland, yet the Union company is not directly concerned in the present negotiations.

CLOSING DAYS

Of Dull Season Bring Some Profit to Vessel Owners.

The last cargo of iron ore will be shipped on Thursday, Nov. 30. No vessels will leave port with ore after that date and in order to get away some of them may have to carry only part of a cargo. The Pittsburgh Steamship Co. shipped its last cargo of ore a week ago and all of its vessels are now safely in winter quarters. The coal shippers, however, have been caught napping and some coal will be carried after Dec. 1 under excess insurance. Shippers are paying liberally, not only offering $1 a ton, but promising large blocks of contract coal for next season's delivery. The Great Lakes Protective Association has met and has agreed to excessive insurance in a few instances. Fancy figures are also being paid on belated cargoes of grain and altogether the vessel owners are finding the closing days of the season quite profitable.

Order Issued on Buffalo Terminal Charges

The interstate commerce commission has issued an order in the case of the Buffalo Union Furnace Co. and the Buffalo Union Terminal Railroad Co., against the Lake Shore & Michigan Southern railway and others. The commission having found that the railroads were unfairly charging the furnace company $2.50 a car on shipments bearing a freight rate of 50 cents per ton or more as compensation for a terminal service at Buffalo, this order provides that the railroad companies on Jan. 2 must do away with such charging for terminal service. The report of the case, which was read by Commissioner McChord, contains an interesting review of the arguments pertaining to a number of industrial railroads in the Buffalo, Cleveland and valley districts. However, the commission did not raise the question of terminal railroads being common carriers, nor whether a terminal railroad which is a common carrier may be allowed for switching services while the terminal road not a common carrier may not be accorded such an allowance.

INDUSTRIAL CONDITION

Discussed by Cleveland Employers—Address by Col. Bope.

Existing industrial conditions and their effect on the general welfare of both capital and labor were discussed by speakers before the members of the Employers' Association of Cleveland, which held its annual dinner at the Hollenden hotel, Tuesday evening, Nov. 28. Col. H. H. Bope, of the Carnegie Steel Co., discussed "Industry and the Middle West" and traced the development of the iron and steel industry in recent years. He directed attention to the recent buying of cars and rails and believed that this movement was the fore-runner of generally improved trade conditions. The increase in iron and steel producing capacity he said was largely attributable to the erection of the new plant at Gary and new construction by independent manufacturers. The Gary plant, he pointed out, was built to meet future needs and he stated that the engagement of its entire capacity is not in the very far distant future. W. H. Stackhouse, of Springfield, O., delivered an address on "The Conservation of Our Industrial Resources." Walter D. Sayle, of the Cleveland Punch & Shear Works Co. and the president of the association, presided.

The following officers were elected by the association: W. D. Sayle, president; W. R. McAllister, first vice president; Richard A. Feiss, second vice president; C. O. Bassett, treasurer; governing board, R. C. Wetmore, H. C. Bradley, D. Croxton, W. S. Blau, J. G. Jennings, E. H. Rohs, L. H. Kittredge, Charles F. Kurz, H. W. Stoer, F. H. Clark, Conrad Krause, J. P. Smith, George F. Thesmacher, W. W. Toot, Soi Salberg, W. C. Sly, Robert Kain, J. H. Harris, Charles Eisele.

New Navy Foundry.—Construction of the new foundry at the Washington navy yard will begin probably by Feb. 1. It will be 132 x 364 feet and about 60 feet high, and will be located at the extreme western end of the navy yard. Bids will be opened about Jan. 15. It will be of steel frame and brick, with a central bay and two wings.

The Chesapeake & Ohio Coal & Coke Co. announces the removal of its office from the Munsey building, Washington, D. C., to 146-156 West Main street, Norfolk, Va.

STACK RELIGHTED

By Shelby Iron Co. After Some Extensive Repairs.

The Shelby Iron Co., of Shelby, Ala., blew in its No. 2 furnace, Nov. 21, after a suspension of five months. During this time the plant has been partially reconstructed and several new features added, at considerable expense, making the plant one of the most up-to-date charcoal iron makers in the United States.

This blowing in will be another step in a continuous series of blasts which began with a five-ton furnace built in 1844. From that time on the smaller furnaces have been torn down from time to time, and larger ones built, to meet the demands of users of Shelby charcoal iron, until, today the plant consists of two 65-foot modern stacks equipped with the latest features for making high-grade charcoal iron.

From the beginning the different managements have clung to the policy of making a special grade of warm blast iron, for which there has always been a ready market among the most exacting users, for the manufacture of car wheels, rolls and special castings requiring the greatest strength and toughness combined with correct chilling.

The special quality of Shelby iron is due to the degree of care used in each step of its manufacture, in the selection of the raw materials and their preparation for use. With the exception of a few small lots of ore of suitable quality, all the ore used has been mined from the deposits of brown ore lying in immediate proximity to the plant. Those ores are noted for their high iron content, low phosphorus and low sulphur with sufficient manganese available to produce desired mixture.

Obituary

B. T. Boyts, aged 71, head of the firm of Boyts, Porter & Co., manufacturers of mine pumps, Connellsville, Pa., died suddenly at Connellsville, Nov. 28.

Frank M. Townsend, general agent of the Colorado Midland railway, Pittsburgh, died Nov. 25, at Bluefield, W. Va., of typhoid pneumonia. Mr. Townsend was 53 years of age. He was a brother of J. Fred Townsend, traffic manager of the National Tube Co.

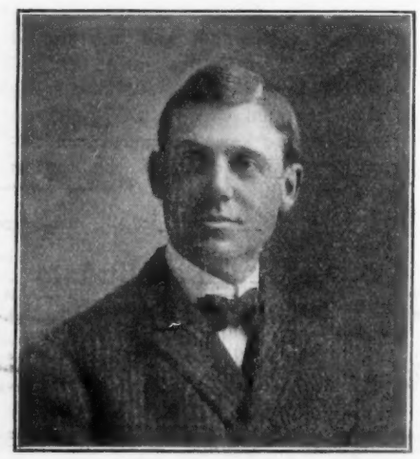
Elisha H. Flinn, president of the Northern Iron & Chemical Co. and connected with several Detroit financial institutions, died suddenly at his home in that city, Nov. 24, aged 67 years. Following the death of Joseph Berry, Mr. Flinn was president of the Lake Superior Iron & Chemical Co. until it passed into syndicate control.

Death of Harry F. Forbes

No death of recent days in the iron and steel business has touched more deeply and affected more sadly a tremendous circle of friends, admirers and business associates than that of Harry Faris Forbes, of Rockford, Ill., president of the Rockford Malleable Iron Works.

Gifted with a remarkable personality in which perfect candor and a most charming manhood combined to make him exceedingly popular and thoroughly trusted by everyone who knew him, his death entirely and suddenly unexpected, gave all who knew him a distinct shock.

It occurred at his home Sunday, Nov. 19, where he had returned only



HARRY F. FORBES

a few hours before from Ann Harbor where he had gone to view the Michigan-Pennsylvania football game.

Mr. Forbes was born at Rockford, Oct. 11, 1862, his father being Alexander Forbes, pioneer manufacturer of that city, who started in Rockford a malleable iron business in 1852 that was the first one of its kind west of New York state and which grew eventually into a large and modern plant.

Harry Forbes became the head of the concern at the death of his father in 1902, he having acquired practical knowledge of all the departments of the business in which he had been active ever since his graduation from the University of Michigan in 1884.

He was also president of the Peoples Trust & Savings Bank, to which post he succeeded his father; trustee of Rockford college and Rockford University club, a member of the Rockford Elks, Seta Psi and Country club.

He was a widower, his wife having died in 1903. One son, Duncan, survives him, together with his mother, two brothers, a sister, his mother being Mrs. Elizabeth Forbes, who is in feeble health in Tucson, Ariz., and who was unable to attend the funeral. He leaves an estate of $200,000, most of which is bequeathed to his son.

Personal

I. W. Bollinger has resigned as president of the Keystone Tube Works, Inc., Connellsville, Pa., and T. S. Lackey, Uniontown, Pa., has been made acting president.

Walter R. Emig, formerly connected with the inspection department of the Toledo Computing Scale Co., Toledo, O., has become secretary and treasurer of the Toledo Metal Spinning Co., that city.

Frank L. Sessions, who until recently conducted a practice as consulting mechanical and electrical engineer at Columbus, O., has been appointed superintendent of the Standard Welding Co., Cleveland.

Harry Parrock, assistant general manager of the Youngstown mills of the Republic Iron & Steel Co., has resigned to become director of safety in the newly elected municipal administration.

George S. Capes, formerly connected with the Nathan Mfg. Co., New York City, has accepted a position with the Lima Locomotive Co., Lima, O., where he is serving as one of the works executives.

William H. McIntrye has been elected first vice president of Manning, Maxwell & Moore, Inc., New York. Mr. McIntyre was formerly vice president of the Equitable Life Insurance Co. and president of the San Antonio & Aransas Pass railroad.

Louis Follet, secretary of the Standard Tin Plate Co., Canonsburg, Pa., on Nov. 25, gave a dinner at the Hotel Schenley, Pittsburgh, to celebrate his fifteenth wedding anniversary. Mr. Follet had as his guests 25 officials of Pittsburgh and western Pennsylvania steel companies.

Andrew Carnegie celebrated the seventy-sixth anniversary of his birth on Nov. 25. Expressing his feelings upon this occasion, Mr. Carnegie stated that he was a very happy man in his retirement from business and that his greatest joy was the spending of his money for the benefit of his fellow men.

The Works of the National Brake & Electric Co.

Description of the Machine Shop and Storage Warehouses of a Large Plant Manufacturing Air Compressors, Air Brakes and Gas-Driven Locomotives

On account of increased business, the National Brake & Electric Co., Milwaukee, has recently made extensive additions to its plant in all departments, materially increasing the output. The company manufactures air brake equipment for electric railways, a complete line of motor and belt-driven air compressors for shop and construction work and also gas-driven locomotives for general industrial service. Including the recent improvements, the plant now comprises a large machine shop, an extensive storage warehouse, carpenter shop, pattern shop, steel foundry, gray iron foundry, brass foundry, power plant, locomotive testing shop and an office building. The foundry departments were described in the last issue of THE IRON TRADE REVIEW, and in this article the machine shop and auxiliary departments will be considered.

Layout of the Plant.

The plant of the company is located on the east side of Milwaukee and occupies a tract of 15 acres. It skirts the line of the Chicago & Northwestern railroad on the east and extends west about 500 feet, where the land slopes abruptly, and then continues west for an additional 350 feet to the east bank of the upper Milwaukee river. A large public park lies north of the site and the land to the south is utilized for freight yards. Advantage has been taken of the peculiar topography of the ground in designing the plant. The layout of the various buildings is shown in Fig. 7 The machine shop extends east and west and the steel foundry is parallel to it, the distance between the two buildings being about 120 feet. This space is utilized for an iron and steel storage yard and is spanned by a 10-ton traveling bridge equipped with two five-ton traveling hoists. The main storage warehouse, which is one of the features of the plant, is located back of the machine shop on the lower level adjacent to the river. The roof of this warehouse is flush with the main floor of the machine shop, and forms a storage yard for lumber and other heavy materials. The locomotive testing department is in a separate building north of the machine shop; the iron foundry occupies a portion of the space between the machine shop and steel foundry and the office lies to the east of the iron foundry with its main axis north and south.

In general, it may be said that material is delivered to the south side of the plant and moves through the foundries to the east end of the machine shop. After undergoing the various machining operations, the product is assembled in the west end of the building and shipped out over a track which extends the full length of the south side of the shop, as shown in Fig. 7. Some of the parts and accessories which enter into the machines manufactured by the company are purchased complete in the open market. These are delivered to the storehouse, from which they are issued to the erecting floor immediately adjacent. The movements of material through the plant are fairly regular, and considering the intricate nature of the finished articles, there is relatively little effort wasted in handling stock in the process of manufacture.

The Machine Shop.

The machine shop building is a concrete brick and steel structure, the ground floor covering an area of 186 x 450 feet. There are two galleries above the main floor, thus making practically a three-story building. The structure is surmounted by a hip roof which contains extensive skylights and ventilators. The first and second floors are divided into five sections comprising a center bay and two side bays separated from each other by two assembling aisles, 35 feet in width, which run the entire

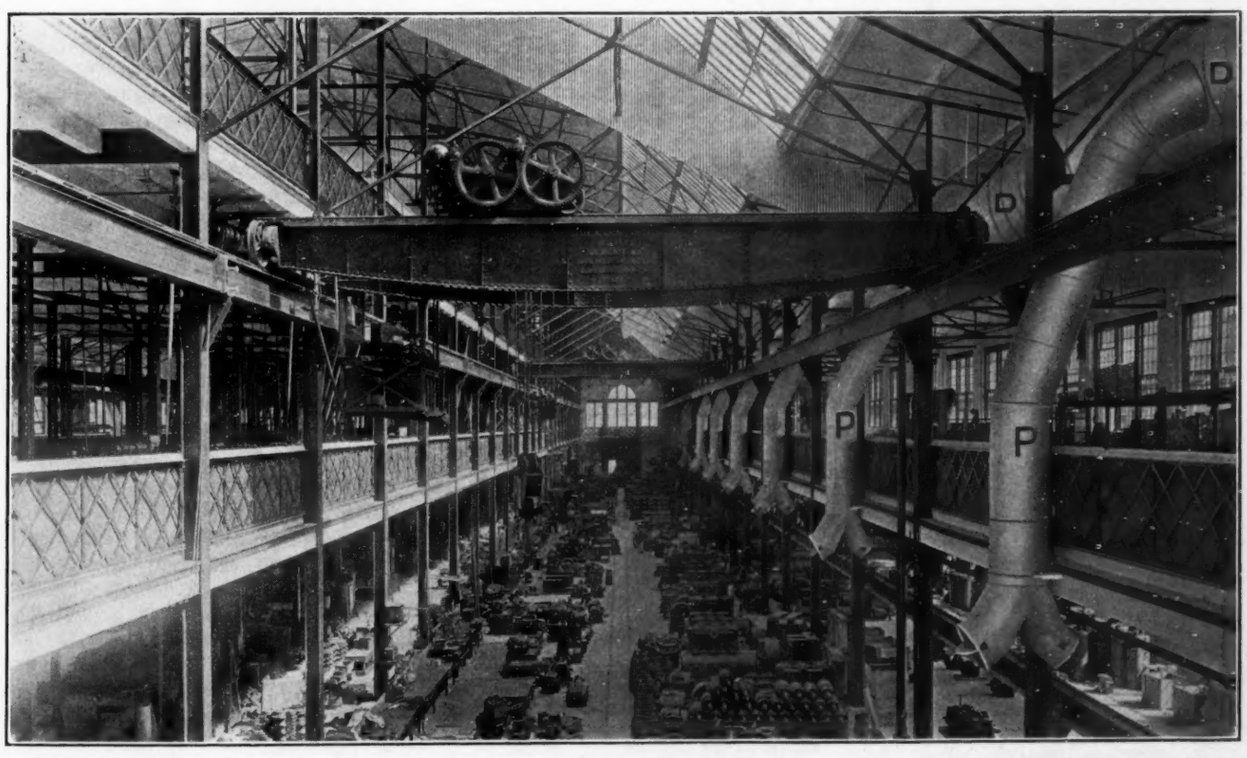


FIG. 1—GENERAL VIEW OF THE SOUTH BAY OF THE MACHINE SHOP OPERATED BY THE NATIONAL BRAKE & ELECTRIC CO.

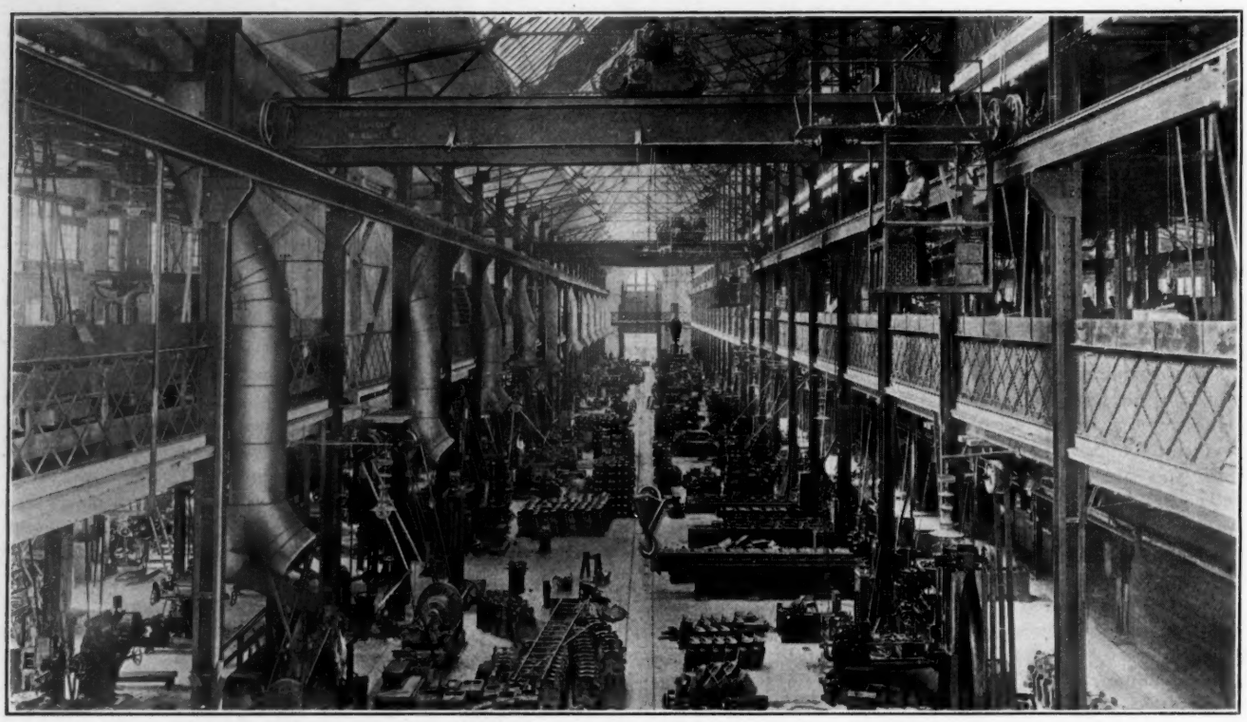


FIG. 2—PLANERS AND GENERAL MACHINE TOOLS IN THE EAST END OF THE SOUTH BAY

length of the building. The third floor has no side bays and is 450 x 50 feet. Structural steel posts support the weight of the upper floors. The beams are steel, I-beam section, but the floor joists are wood, generally 4 x 6 inches in cross-section; the joists are fitted between the beams, resting on iron brackets riveted thereto.

Gas Lights.

The machine shop is lighted with 350-candlepower, inverted-mantle gas lamps, burning city gas. Each lamp has four inverted mantles surmounted by a flat porcelain reflector. The units are spaced 30 feet apart in each direction and are 15 feet from the floor. The weight of the lamps is carried by the gas feed pipes, which are wound in the form of a short coil spring that absorbs the vibration and protects the mantles from injury. Each unit is provided with a pilot light which burns continuously, so that it is not necessary to light the lamps every day with a match. The light is very soft and easy on the eyes, and on account of the low price of gas, is exceptionally economical.

Particular attention has also been paid to the heating and ventilation of the shop. A forced, hot air system is employed. Two 14-foot fans, each direct-connected to an 18-horsepower steam engine, situated in the power plant, draw in fresh air from the outside over pipe coils containing live and exhaust steam which heat it to the proper temperature. The fan then forces the heated air through a large main laid in a tunnel connecting the power plant with the machine shop; this main connects with distributing mains, *D*, Fig. 1, that run the full length of the shop, being carried by the columns supporting the traveling cranes and upper floors. Numerous branch pipes, *P*, connected to the distributing mains, are used to deliver the heated air uniformly over the entire floor area. The foul cold air is drawn off the floor and exhausted by a fan situated at the west end of the shop. In the summer, when necessary for purposes of ventilation, cold fresh air is forced through the system.

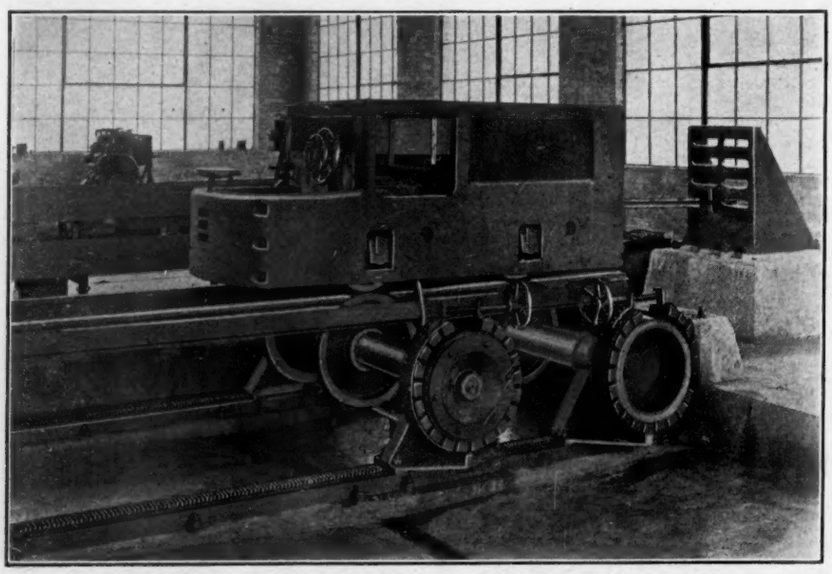


FIG. 3—THE LOCOMOTIVE TEST PIT

Machine Shop Arrangement.

The general arrangement of the various departments in the machine shop is indicated in Figs. 9 and 12. In the middle of the center bay are the shop offices, punch machines, stock and grinding departments. The locomotive construction and assembly departments occupy the north bay, while the south bay is devoted to motor and compressor construction and assembly. An assembly aisle, running the full length of the shop, borders on either side of the central bay. Each aisle is served by two electric traveling cranes, one of 10 tons capacity, and the other of 20 tons capacity, with a 5-ton auxiliary hoist. These cranes were furnished by the Pawling & Harnischfeger Co., Milwaukee. As

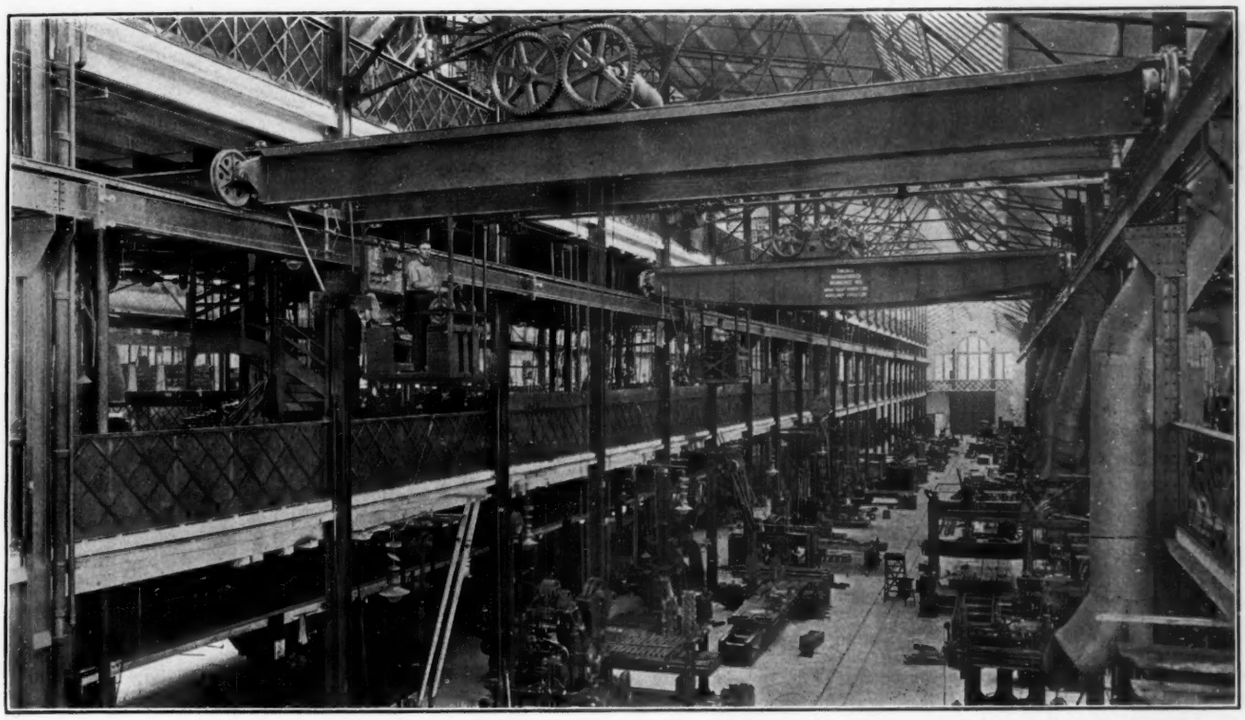


FIG. 4—LOCOMOTIVE DEPARTMENT IN THE NORTH BAY OF THE MACHINE SHOP

shown in Fig. 2, the east end of the south section of the machine shop is equipped with planers and milling and gear hobbing machines. The planers, which have extra long beds, are used for machining the crank cases of air compressors, as many as 11 cases being placed on the machine at one time. There are three of these planers and each one is used to perform a separate operation on the crank case.

Gear-Cutting Department.

The gear-cutting department is situated in the southeast corner of the shop. The air compressors manufactured by the National Brake & Electric Co. are fitted with herring-bone spiral gears. They are made in right and left sections, each section being cut on a different machine, and afterwards properly assembled on a single shaft. The gears are cut on milling machines, a number of which have been installed by the Kempsmith Mfg. Co. and Brown & Sharpe. Several Pfauter gear hobbing machines have also been installed recently, together with a Gleason gear planer for cutting bevel gears.

As indicated in Fig. 9, the air compressors are assembled at the southwest corner of the main floor. The crank cases, cylinders, gears, etc., reach this point directly from the machine tools previously mentioned. The connecting rods, cranks, shafts and various similar parts are brought down to the assembly department from the second and third floors on which they are manufactured.

The north bay is devoted to the manufacture and assembly of gas-driven locomotives. The east end of this department is equipped with the heavy machine tools necessary for this work, including large lathes, boring mills, planers, etc. Included in this equipment are two Niles-Bement-Pond motor-driven planers, 72 and 96 inches between housings, and a 32-foot bed Niles planer, 64 inches between housings. The heavy punch presses, which were supplied by E. W. Bliss Co., are located at the west end of this department. In this section of the shop also is located the forge room, annealing furnace and japanning room. The annealing furnace is situated in the extreme northwest corner of the building; it is designed to burn crude oil and is provided with a truck running on a ball track. The furnace is approximately 12 feet long, 10 feet wide and 8 feet high.

Upper Floors of Machine Shop.

The upper floors are used for the manufacture of small parts and for various auxiliary departments. The center section of the second floor is equipped with engine and turret lathes and automatic screw machines for the production of piston rings, shafts and other small parts. This portion of the shop is also equipped with tools for

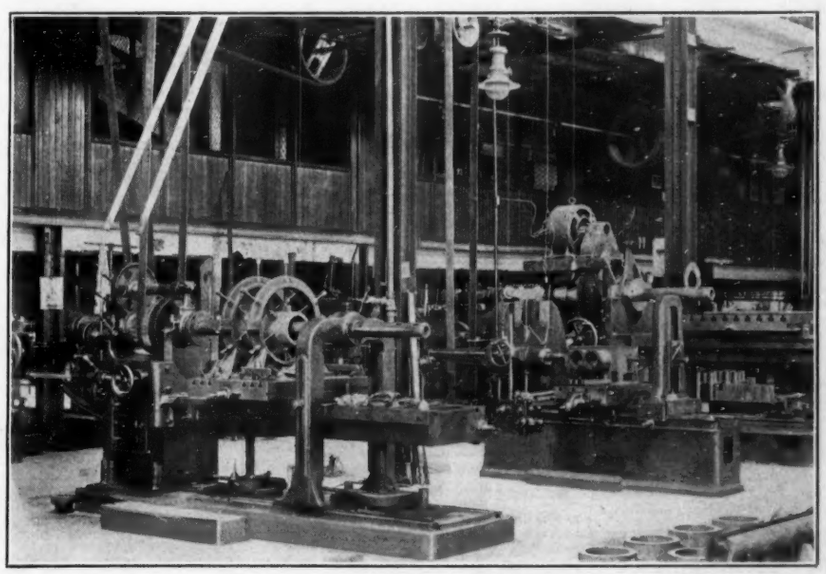


FIG. 5—BORING MACHINES WORKING ON AIR COMPRESSOR CYLINDERS

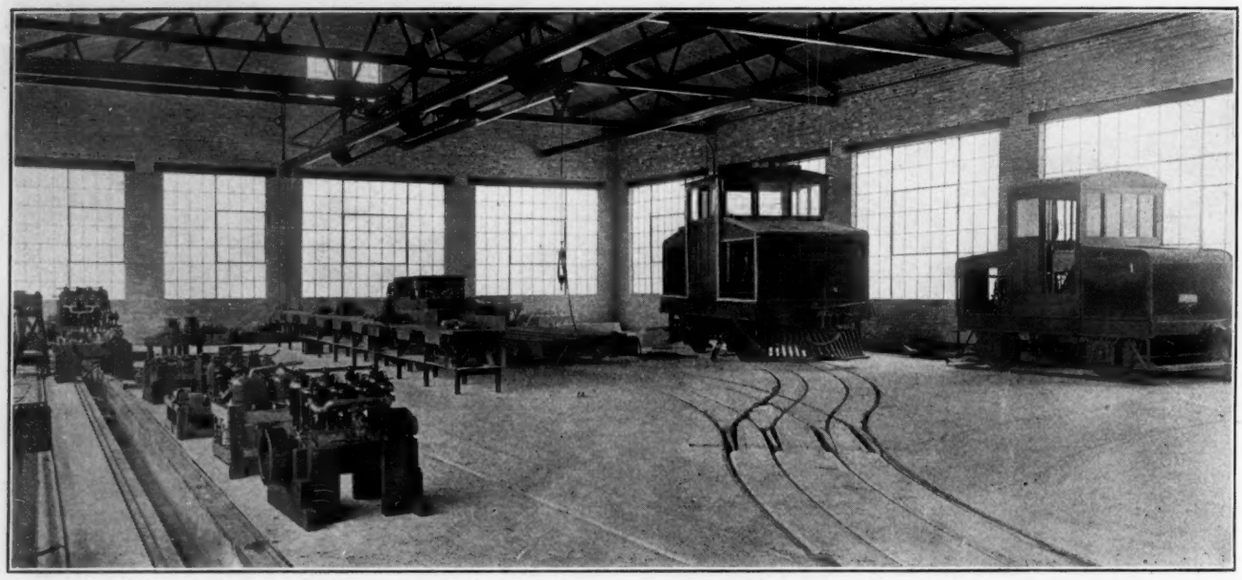


FIG. 6—GAS ENGINE AND LOCOMOTIVE TEST HOUSE

machining air compressor connecting rods, boxes, brake valves and for turning armature spiders. Included in the equipment at this point are several Lodge & Shipley 2½-inch x 30-foot shaft lathes. The south gallery on the second floor is sub-divided for the shops of the works electrician, plumber, steamfitter and millwright. The east end of this gallery, however, contains the general tool room for the machine shop. It is unusually thoroughly equipped with lathes, shapers and grinding machines and also with two gas furnaces for tempering.

The north gallery of the second floor contains the armature winding and assembling departments and also apparatus for impregnating coils with insulating compound. This consists simply of two steel tanks, about 5 feet high and 3 feet in diameter. The compound is stored in one tank and the coils to be treated are placed in the other; the storage tank is heated with live steam and when the proper temperature has been attained the compound is pumped over into the treating tank. Live steam is then turned into the treating tank and the pressure is continued for several hours until the coils are thoroughly impregnated. The coils are wound on special lathes fitted with forms which shape the coil automatically. It is generally customary to employ girls for work of this character, but the National Brake & Electric Co. has found it more satisfactory to employ boys in the coil-winding and armature assembling departments. The boys are said to be more steady workers and many of them graduate into more responsible positions in the shops.

Only the east half of the third floor is used at present for manufacturing purposes, the west half being left free for the future extension of the business. This floor consists of a single central gallery, 50 feet wide and 450 feet long. It is equipped with lathes, shapers and milling machines for machining small air brake parts and for turning all the brass and bronze fittings which are used in the various products manufactured by the company.

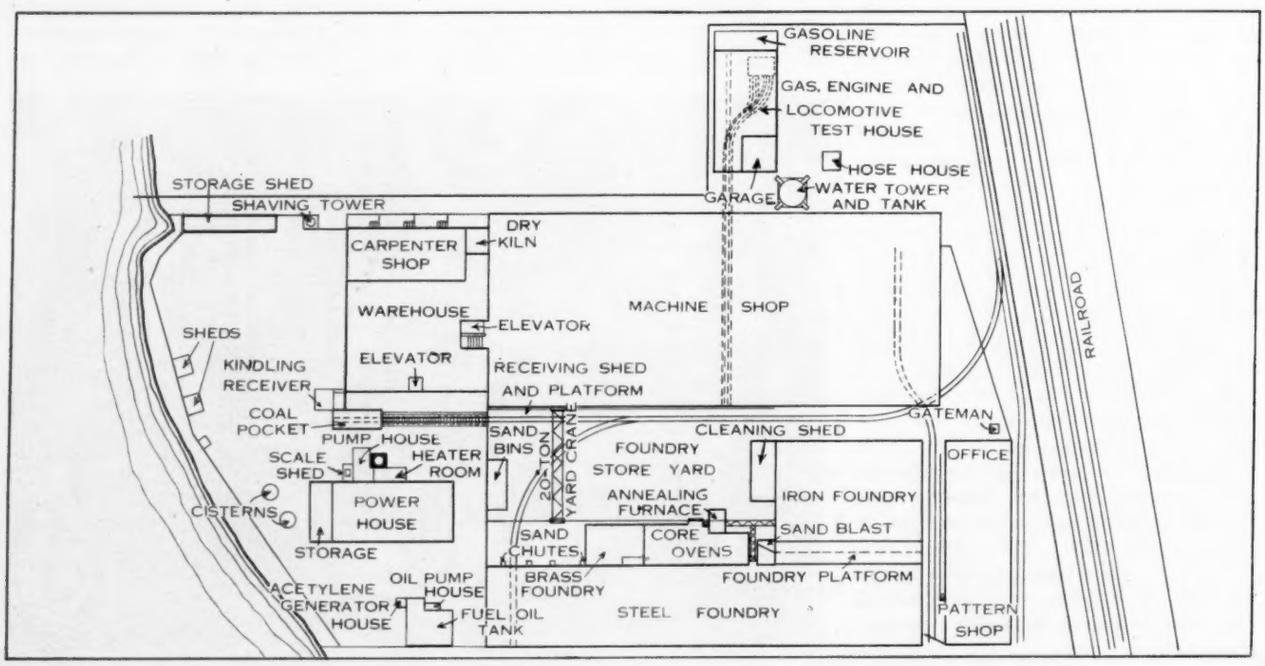


FIG. 7—PLAN VIEW OF THE PLANT OF THE NATIONAL BRAKE & ELECTRIC CO., MILWAUKEE

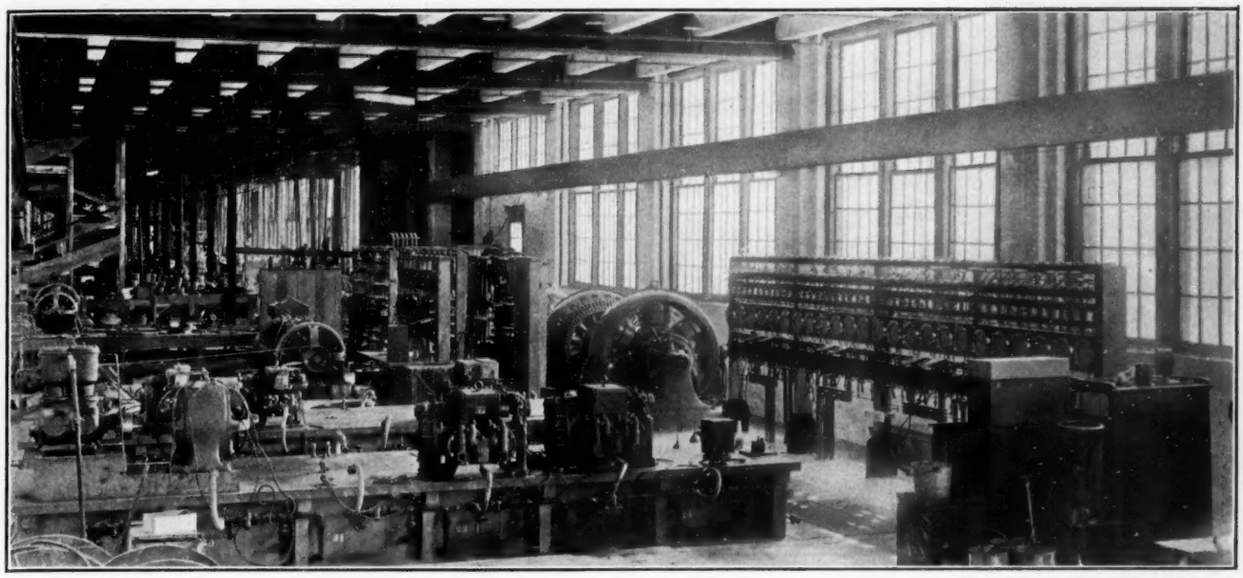


FIG. 8—AIR COMPRESSOR TESTING DEPARTMENT

The machine tools on the second and third floors are motor-driven through line and counter-shafting on the group system. The size of the groups is kept within reasonable limits in order to equalize the load factor, the motors varying from 10 to 30 horsepower. There are no line shafts over 100 feet in length.

Three electric freight elevators connect the various floors; one is five tons and the other two are three tons capacity each. In addition to the elevators and traveling cranes, transportation of materials throughout the shop is facilitated by a 24-inch industrial railway extending the full length of both assembly aisles and reaching all points on the main floor. Standard gage tracks are built across the main floor at the middle and also at the east end so that heavy parts can be loaded direct from the assembly floors onto cars. The main shipping track extends the full length of the south side of the shop. It is provided with a concrete platform built level with the car floors so that the shipments do not have to be hoisted in loading. A three-ton crane is used here for handling material. The shipping track is equipped with a scale so that the weight of each outgoing car can be determined.

Before being shipped, all air compressors are thoroughly tested under operating conditions. A section of the south bay of the machine shop is set aside for this work and equipped with testing tables on which the machines are placed. The tables are located above a battery of storage tanks concealed beneath the floor. One 100-kilowatt, direct current and one 200-kilowatt motor-generator set furnish the various voltages and currents necessary for the testing apparatus. The motor-generators can be operated singly or as a unit, according to the requirements.

Fig. 11 shows the interior of the storage warehouse, which is located below and behind the machine shop. The warehouse is 140 x 176 feet and is equipped with steel racks for the storage of various small parts and with extra

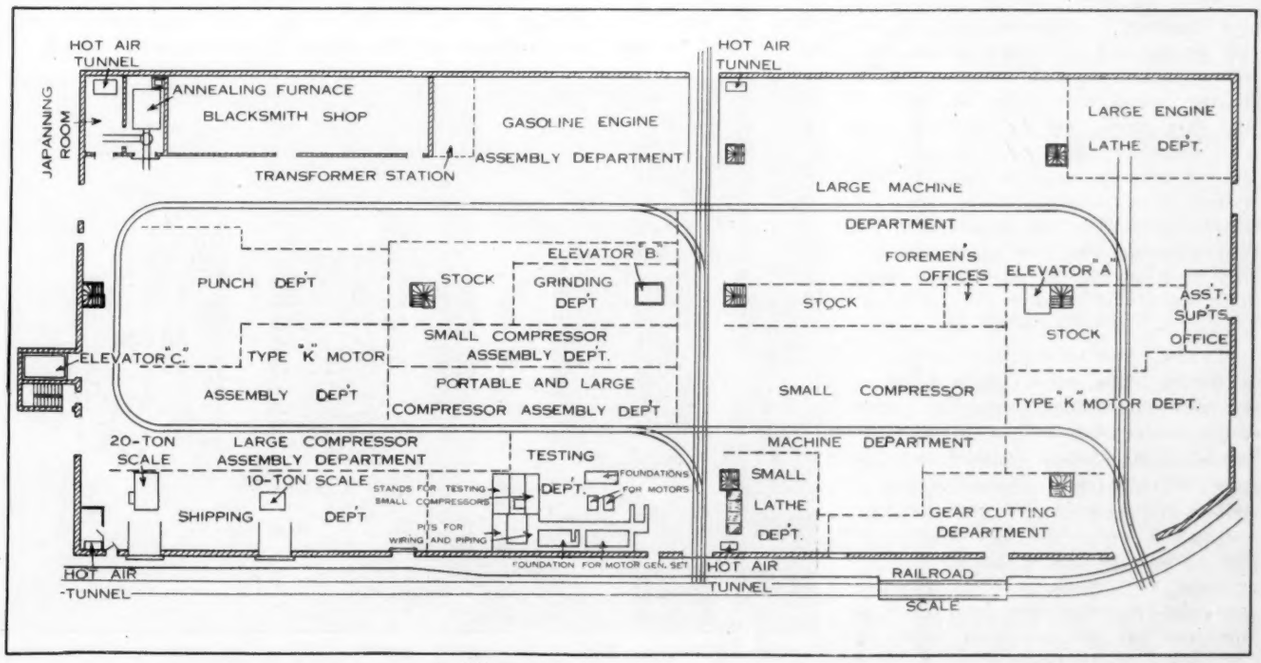


FIG. 9—FIRST FLOOR OF THE MACHINE SHOP, SHOWING ARRANGEMENT OF THE VARIOUS DEPARTMENTS

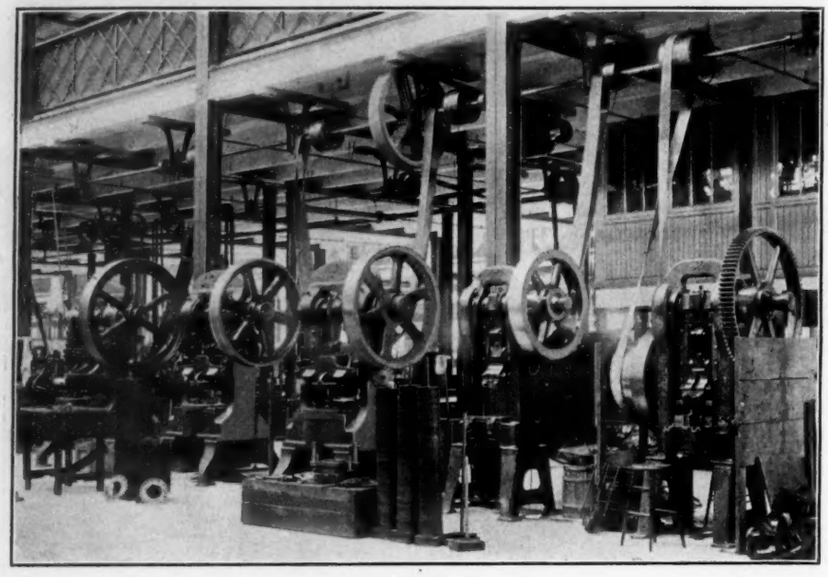


FIG 10—BLISS PUNCH PRESSES MAKING ARMATURE SPINDLES

heavy concrete floor sections for carrying heavy materials. The offices of the storekeeper are located in the northwest corner of the room, separated therefrom with a glass partition. There are two three-ton electric elevators for handling material between the store room and the various floors of the machine shop. The columns supporting the ceiling of the store room protrude 4 feet and serve as a support for a concrete roof, 10 inches in thickness, which is paved on top with hard brick. This roof, being on the same level as the machine shop floor, forms a storage yard for lumber and other heavy materials. A brick building, 42 x 118 feet, used as a carpenter shop, is erected on the northwest corner of this roof. The space between the ceiling of the store room and the roof is connected with the hot air heating and ventilating system, previously described, and numerous outlets in the ceiling convey the air down to the store room. On the north front of the warehouse is a concrete platform, 10 feet wide, to facilitate unloading materials from wagons; there are also two team entries on this side. The warehouse is lighted by gas lamps similar to those used in the machine shop.

Testing House.

To the north of the machine shop is a testing house, 60 x 120 feet, having concrete foundations and floor, brick walls, metal sash and a concrete tile roof. This building contains two test pits, provided with locomotive testing outfits, which can be adjusted for various gages and wheel base lengths for the purpose of testing gas-driven locomotives. The testing machines are equipped with dynamometers for registering the draw bar pull and prony brakes for measuring the horsepower. The locomotives are conveyed from the machine shop to the testing house by means of a transfer truck arranged for carrying locomotives of any gage. The test house is also equipped with prony brakes and recording apparatus for testing gas engines.

Safety Devices.

The company has given considerable attention to accident prevention and the various machine tools are arranged on wide aisles to avoid the dangers arising from congestion and overcrowding. The punch presses are equipped with a pantograph guard so connected to the operating die of the machine that it is impossible for the workman to get his fingers between the dies when they come together. Safety rules have been formulated covering the operation of the various machines and their enforcement is rigidly observed. As an example of this, the following rules, which are posted conspicuously on each punch press, are quoted:

1.—Under no circumstances place your fingers under punch or die.

2.—If it is necessary to remove anything from the punch or die, use a stick or something similar for the purpose, but do not use your fingers. If you have no stick, apply to the foreman, who will see that you are provided with something proper for such use.

3.—If your machine is not working properly, or is in any way defective or out of order, immediately notify the foreman and do not again use the machine until it has been repaired.

4.—These rules must be obeyed and no one has authority to change them except an officer of the company.

Organization of the Plant.

The organization of the plant is comparatively simple. The chief operating officer is the general superintendent, who is aided by a staff officer bearing the title, assistant to the superintendent. Reporting to the general superintendent are two assistant superintendents who have direct charge of the operation of the machine shop. One has jurisdiction over the air compressor, locomotive and assembling departments and the other is in charge of the detail manufacturing, tool room, armature department, regulator and valve sections. The storekeeper reports direct to the general superintendent. The general superintendent, of course, is subordinate to the general manager, having charge of the entire works. The cost and production department co-operates with the general

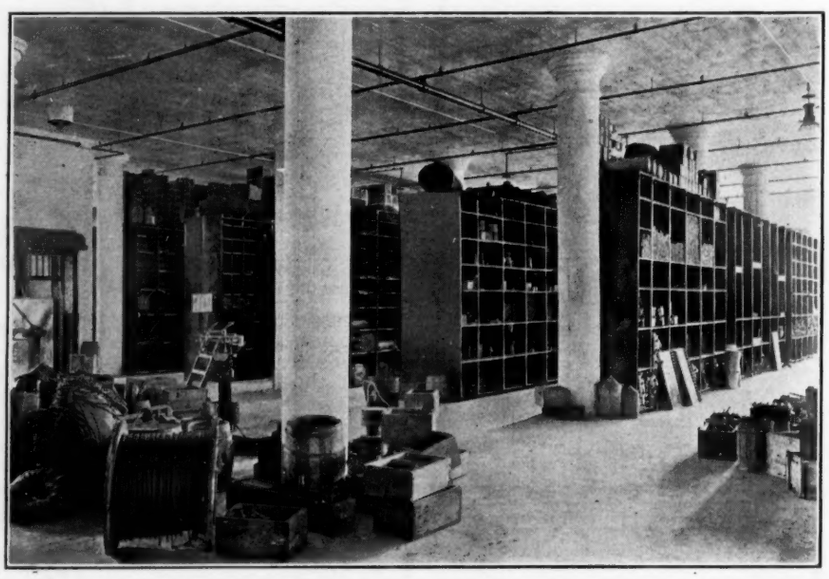


FIG. 11—A CORNER IN THE STORAGE WAREHOUSE

superintendent, but is directly responsible to the general manager. This department has charge of the cost-keeping and also, with the co-operation of the shop officials, sets the rates and fixes premiums. The purchasing department is a sub-division of the production department. The foremen in the various sections of the machine shop receive daily reports from the workmen covering the number of pieces made on any given order and check up the production. The two assistant superintendents, with the advice of their foremen, determine the feeds and speeds and the details of the various machining operations.

The offices of the plant are located on the second floor of a building, 200 x 66 feet, situated just east of the iron foundry. The rear portion of this floor contains the drafting room and engineering departments; the accounting department and stenographic section occupies the central portion and the private offices are arranged around the sides. The first floor of the office building is used for storage purposes and the pattern shop is situated on the third floor. A completely equipped blue print room and photographic department has been established on the roof.

The Pacific Sewer Pipe Co. is planning to erect a large plant at Los Angeles and will install some new machinery.

Book Reviews

Transactions of American Institute of Chemical Engineers; 407, 6 x 9-inch pages; published by the D. Van Nostrand Co., New York City; furnished by THE IRON TRADE REVIEW, Cleveland, at $6, net.

Volume III of the "Transactions of the American Institute of Chemical Engineers," contains the complete report of the second semi-annual meeting held at Niagara Falls, Ont., June 22 to 24, 1910. The addresses and papers read before the Institute with a stenographic report of the discussions are included. A number of interesting papers contained in this volume follow: "Development of the Chemist as an Engineer," "The Training of Chemical Engineers which Meets the Requirements of Manufacturers," "Teaching Industrial Chemistry," "The Changes in Industrial Chemistry Caused by Electricity," "Notes on the Corrosion of Iron and Steel and Its Prevention," "Chemical Industries of Canada," "Loss in Coal Due to Shortage," "Plant Design," as well as an interesting symposium on sewage disposal.

Design of Walls, Bins and Grain Elevators; by Milo S. Ketchum, dean of the College of Engineering of the University of Colorado; 554 6 x 9-inch pages, illustrated. Published by the McGraw-Hill Book Co., New York City, and furnished by THE IRON TRADE REVIEW for $4 net.

The second edition of this well-known work contains more than 150 pages of new material and the chapters on reinforced concrete retaining walls and methods of construction and cost of retaining walls have been entirely re-written. The work presents a systematic analysis of the stresses due to granular materials together with a discussion of the principles of design and the details of structures which contain the granular materials. The design of bins for coal, ore, etc., is considered in detail. Algebraic methods for calculating stresses have been given due consideration and graphic methods for calculating the pressures on retaining walls and hopper bins are also given. In an appendix, a brief resume of concrete, plain and reinforced, is included.

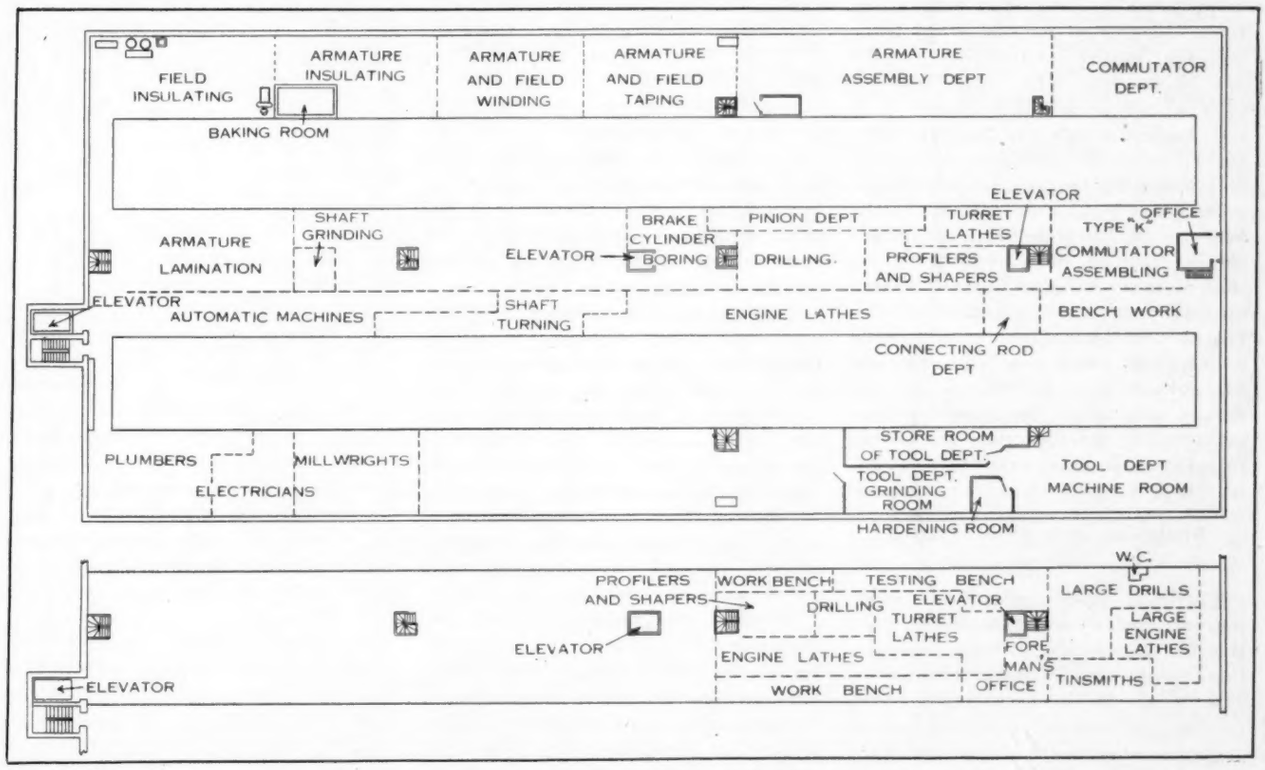


FIG. 12—SECOND AND THIRD FLOOR PLANS OF THE MACHINE SHOP

The National-Acme Mfg. Co., Cleveland, is now manufacturing an improved spring die which can be furnished with various threads and dies of special pitch and shapes made to order as desired. This company has made a large number of spring or prong dies for its product department for a number of years and has developed a die department for the manufacture of spring dies and self-opening die heads and chasers.

A Discussion of the Heat Treatment of Steel[1]

Annealing Methods, Temperature Measurements and Quenching Processes—Case Hardening Methods and Operations

By James H. Herron

For the successful heating of steel, the furnace design is an important factor. Two classes of furnaces will be discussed: (1) The forging furnace; (2) annealing and heat-treating furnaces. The latter type is the one generally used for case hardening.

In forging furnaces, the arch should be so constructed that the maximum temperature is obtained in the heating zone. This is accomplished by placing the burner slightly above the line of heating. The flame impinges upon a half arch, which causes it to roll back through the heating zone. In this way the combustion is probably complete before the gases come in contact with the material to be heated, and, therefore, results in much cleaner heating than is possible by the flame from the burner playing directly upon the material to be heated. All oil-fired furnaces should be supplied with cover plates to the burner openings, so that when the burner is shut-off, the opening may be closed to prevent the heat of the furnace carbonizing the oil on the face of the burner.

Annealing and Heat-Treating Furnaces.

The ideal annealing and heat-treating furnace is the muffle type, but since this is not practical in large furnaces, the nearest approach to it must be considered. In such a furnace the combustion chamber is either provided under the hearth, or at the side, and of sufficient size to insure complete combustion. The former seems to be much more satisfactory, and, therefore, is more generally used. The ports leading from the combustion chamber to the heating chamber should be so arranged, for position and size, that the heating chamber may be heated uniformly. In a well-designed furnace, the temperature of the heating chamber should not vary, in all of its parts, more than 20 degrees Fahr. The heating chamber can be made of a suitable size to take care of the work to be done. In any heat-treating furnace, the flame should not, under any circumstances, come in direct contact with the material to be heated. There are numerous modifications of heat-treating furnaces, with burners and outlet openings placed in different positions, and with the baffling arrangement in the combustion chamber somewhat varied to suit the ideas of the designer. A wide variation seems to be possible without affecting the results. All heat-treating furnaces should be provided with covers to the burner openings, in order that the furnace may be completely sealed if necessary.

Fuel.

A number of different fuels are used satisfactorily for annealing and heat-treating, but we shall consider only two, since coal and coke have been largely replaced by either gas or oil.

Gas is an ideal heating medium where the natural product can be obtained, but where it is necessary to use manufactured gas the cost is prohibitive. The regulation of the gas flame is under the control of the operator, and small variations of temperature can easily be obtained.

Oil can always be used, because it can be obtained readily in almost all sections, and at such prices, compared with its heating value, that it is probably the most economical fuel that can be obtained. Oil, to atomize freely, should not be too heavy, and satisfactory results are obtained between 36 and 30 degrees Baume, without pre-heating. The prime essential in the use of oil, as fuel, is to thoroughly atomize the oil and supply enough additional air to insure complete combustion. In cold weather, all oil should be pre-heated; probably by heating coils in the supply tank.

Atomizing Mediums.

Dry steam is probably the most satisfactory atomizing medium, but is usually unsatisfactory to use on a large number of furnaces, or where the distance to be carried is great.

Air, therefore, is generally used, either at a low or high pressure. The former, at about two pounds pressure, gives very satisfactory results; the latter, at about 15 pounds pressure, seems to give equally satisfactory results. The results are, of course, contingent upon the design of the burner. In some installations, nigh pressure air is used for atomizing and low pressure air, furnished by fan, is used for combustion.

Control of Temperature.

For all important work, the use of some reliable pyrometer is strongly recommended. Most pyrometers should be checked frequently against some standard. For those who are unwilling to constantly check their pyrometer, the trained eye is much safer to rely upon. A pyrometer that is not checked may give bad results, and may be the cause of much of the failure that cannot otherwise be accounted for.

In the thermo-electric pyrometer, the tube should be located, as nearly as possible, in the same zone as the object to be heated, and in some cases should be in direct contact with this object. It should be subject, in no case, to the direct action of the flame, and in some special cases it is desirable to shut off the furnace entirely for some minutes before making the observation. The thermo-electric couple may be checked by comparison with some standard, or, at the known melting point of some metal; the metal to be in the pure state.

There are a number of optical pyrometers on the market, which have, in some cases, proven satisfactory. The instrument is focused directly on the object and the temperature is determined by the comparison with a filament, or flame, of known temperature. This has one evident advantage, it gives the temperature of the object, regardless of the temperature of the furnace.

The radiation pyrometer for high temperatures has proven very satisfactory. In this case the thermo-couple does not come in contact with the heat, but is in the instrument. The instrument is focused upon the heated object and the temperature indicated or recorded by a suitable instrument.

Working Without a Pyrometer.

In working without a pyrometer and relying on the eye, the light surrounding the furnace should be dull, and should be kept as nearly constant

[1]Presented at the November meeting of the Metal Trades Superintendents' and Foremen's Club of Cleveland.

as possible in order that the eye may not be misled by the changing contrasts between the surrounding light and that of the object heated. In particular, direct light should be excluded, and any arc or other strong lights should be so placed that neither they, nor any concentrated part of their light is in the field of the operator's sight when he is estimating by eye, the temperature of the objects heated. Of course, allowances should be made for the character of the day, and whether work is being done during the day or at night.

Use of the Magnet.

The magnet has been used to some extent to determine the proper annealing and hardening heat. This applies only to steels containing between 0.50 and 0.90 per cent carbon, due to the fact that steel with less than 0.50 per cent carbon ceases to be magnetic before the hardening or annealing temperature is reached. The magnet should be frequently applied after the heated object has reached approximately the annealing and hardening heat. When the magnet no longer attracts the proper heat is reached. In the use of the magnet, care should be taken that the magnet is not heated sufficiently high to lose its magnetism.

Quenching.

The size of quenching tanks required for any particular class of work will depend upon the size of the pieces to be treated. It is customary to have tanks of from 150 to 250 gallons capacity. Where the pieces are very large, the capacity of the tank should exceed this.

The selection of a quenching medium is, at times, very important. Except in special cases, high carbon steel should not be quenched in water. Oil should invariably be used. Low carbon steel, that is, steel below 0.30 per cent carbon, may be quenched in water or brine. It is better, as a rule, to quench thin pieces in oil, regardless of their carbon content.

Forethought and care are necessary in the method of quenching, regardless of the medium. A piece should be quenched in such a manner that it will cause the least distortion, or symmetrical distortion. Where thick and heavy masses of metal are adjacent to thinner and smaller masses, the hardener will have to use his judgment as to the best method of quenching. It is customary to quench the piece in such a way that the heavier parts come in contact with the quenching medium before the thinner parts.

The medium most generally used for quenching is water. This should be in a constant state of circulation, so that the temperature may remain uniform.

Oil quenching, in heat-treating, has become deservedly popular. Fish, lard and cotton seed oils have been used extensively, but mineral oils, costing much less, are rapidly replacing these more expensive oils. The oil should be so cooled that the temperature does not, at any time, exceed 90 to 100 degrees Fahr.

Water, covered with a few inches of oil, is used where the piece should be hard, but where quenching in water would probably cause hardening cracks. The shock in quenching is not as severe as in the case of water, and the steel becomes nearly as hard. The only way to keep such a tank cooled is by a water jacket.

For parts that should be exceedingly hard, brine may be used; about a 20 per cent solution by weight, or of a density sufficient to float a potato. The brine should be kept cool the same as the oil, either by circulating through cooling coils, or using a water jacket on the cooling tank.

The proper temperature at which any steel is to be heat-treated should be determined in advance. This temperature may be determined by the chemical composition of the steel, or, by plotting a cooling curve and noting the point of recalescence. The critical point in heating is about 50 degrees above the point of recalescence observed in cooling. In annealing, or heat-treating, the critical point in heating, only, should be used.

Heating.

The flame should be neutral. This will prevent scaling in heating for forging purposes, and surface decarbonization in annealing and heat-treating. Great care should be exercised in the time required to bring the object to the right temperature. Heating should not be rapid, except possibly in the case of large objects, where the heating of the interior lags behind that of the exterior. This should only apply to the early part of the heating, the final approach to the temperature aimed at should be slow, so that the interior may be brought fully up to this temperature, without carrying the exterior far beyond it. In unequally heated pieces, stresses are set up which may cause their failure. The steel, when heated uniformly, will have a translucent appearance, that is, no variation of color will be noted when examining the surface. When steel is not heated through, it will appear darker toward the center of the exposed surface, and until this effect entirely disappears, steel should not be withdrawn from the furnace. The heater should exercise considerable care, so that no part of the object will be overheated, or underheated, to any great extent. Overheating causes a coarse, weak structure. Underheating, especially in soft steel, tends to have the same effect; the steel also showing signs of brittleness. After steel has reached the proper temperature, it should not be kept in a soaking condition for any length of time. A rule-of-thumb, sometimes used, is five minutes per inch of thickness of the object heated. This will probably insure the refining of the grain. In the case of annealing, the steel may be permitted to cool in the furnace. In hardening, it should be immediately withdrawn and quenched before the temperature drops perceptibly.

Annealing.

The purpose of annealing is not only to soften the steel, but to refine the grain. It relieves the stress set up in the steel by rolling, forging and other working, at a low heat. This temperature is determined as previously stated, and should be sufficiently high to exceed the critical point. In general, the higher the carbon content, the lower the annealing temperature; therefore, different temperatures are used for different ranges of carbon content. The following range of temperatures are recommended by the American Society for Testing Materials:

Ranges of carbon content, per cent.	Ranges of temp., degrees, Fahr.
Less than 0.12	1607-1697
Less than 0.12 to 0.29	1544-1598
Less than 0.30 to 0.49	1499-1544
Less than 0.50 to 1.00	1454-1499

These refer to the usual manganese content. For steels with more than 0.75 per cent manganese, slightly lower temperatures may be used. In order to bring the interior of large objects to an effective annealing temperature, the outside may be raised somewhat above that temperature. Therefore, a range of temperatures is given for each range of carbon content. The upper limit of this range applies to larger objects, and also to the lower range of carbon content given.

Parts that are to be subsequently heat treated in a finished condition, should be either annealed in the rough or in the rough machined state. This will prevent undue distortion when the final hardening takes place, by relieving the internal strains set up by the forging, rolling, etc., and

before quenching, which would set the distorted condition.

The rate of cooling should be regulated to suit the carbon content of the steel and the physical properties desired. The higher the carbon, the slower should be the cooling. Also, the slower the cooling, the softer and more ductile the steel, and the lower will be the elastic limit and tensile strength. Objects containing more than 0.50 per cent carbon, and thin objects of more than 0.25 per cent carbon, should cool slowly in the furnace, in lime or in clay until they become black, when they may be removed. Thin objects of less than 0.25 per cent carbon, and thicker objects of less than 0.50 per cent carbon, may be cooled in the air if they are protected from the weather and from sharp drafts of air. If great softness and ductility are desired, all steel should be subjected to slow cooling. Where a high elastic limit and ultimate strength are desired, cooling in air is advisable even in case of thin objects over 0.25 per cent carbon and thicker objects over 0.50 per cent carbon.

So-called normal steel, to distinguish it from annealed steel, is that which is received from the mill, or the forge plant, before being annealed. Annealing in charcoal is only advisable where the carbon content exceeds 1 per cent.

Heat-Treating.

The foregoing process of annealing is, in fact, heat-treating, but the term heat treated is usually meant to distinguish steel which has been through a toughening process by heating, quenching and subsequent partial annealing. The simplest form of heat-treating, after forging or machining, is as follows:

1. Heat to the annealing temperature.
2. Quench.
3. Re-heat to 600-1,200 degrees Fahr. and cool slowly.

The drawing operation (3) should be varied to suit each individual case. The higher the temperature of this operation, the softer and more ductile is the steel, but the lower the elastic limit and ultimate strength. This, of course makes a tough structure. If less toughness is required and greater strength, the temperature of the drawing operation should be lower. For some classes of work, the drawing operation can be entirely omitted.

Better results than with this treatment may be obtained by the so-called double treatment, which follows:

1. Heat to annealing temperature.
2. Quench.
3. Re-heat to 50 degrees less than the initial temperature.
4. Quench.
5. Reheat to 600-1,200 degrees Fahr. and cool slowly.

This double treatment produces a refinement of grain which is not possible with the single treatment, and should be resorted to for parts where extremely good qualities are desired. By varying the temperature of the drawing operation (5) high elastic limits may be obtained, up to nearly double the amount in the annealed material, while if greater toughness is required the higher drawing temperatures may be used. Steel subjected to this treatment is excellent to withstand shock and alternate stress.

For steel and carbon exceeding 40 per cent a still more elaborate process of heat treatment may be used. After forging or machining, the operations follow:

1. Heat to about 50 degrees above annealing temperature.
2. Quench.
3. Heat to annealing temperature.
4. Cool slowly in furnace in lime or clay.
5. Re-heat to about 50 degrees Fahr. below annealing temperature.
6. Quench.
7. Reheat to 800-1,000 degrees Fahr. and cool slowly.

Steel subjected to this treatment has high fatigue resisting qualities, and can be used for parts that require a high elastic limit and tensile strength, but a relatively low ductility.

The above are the most general methods of heat treatment, and can be varied to some extent to suit special cases.

Case Hardening.

Case hardening is one of the most important branches of heat treatment. Where objects are required to have a tough core and a very hard surface, this is the most satisfactory method for such requirements. Steel from 0.18 to 0.25 per cent carbon gives the best results for this class of work. Of the different methods used in case hardening, we shall consider only two.

Cyanide of potassium is used, either in a molten or a powdered form. Either method has but a limited use. The former is convenient for small objects, such as the parts of typewriters, adding machines, etc.

The most generally employed method in case hardening is packing the material to be case hardened in either cast iron or wrought iron boxes, in a compound, the base of which is carbon.

Raw bone can be used where the pieces are of considerable size. Thin pieces should not be packed in raw bone; owing to its high phosphorus content it has a tendency to cause brittleness in the parts to be hardened. A mixture of granulated bone and granulated charcoal has proven very successful. Expended bone about two parts, mixed with one part of raw bone, seems to be a fairly satisfactory mixture. Small screws and other parts can be carbonized in expended bone only. Charred leather is a very satisfactory carbonizing material, and is quite extensively used, although in some cases the cost is prohibitive. Bone-black, or animal charcoal, is very frequently used, and gives very satisfactory results. This is sometimes saturated with a carbon oil, and is called hydro-carbonated bone black. It seems to be effective and the only objection to its use is that it carbonizes with the evolution of some smoke, which is objectional when the furnace is not provided with a flue.

Method of Packing.

The size of box should depend upon the size of the parts to be carbonized, and should be of such shape that the heat will readily penetrate to the center without too long an exposure. The pieces should not be placed closer than 1 to 1½ inches to the side or bottom of the box, but can be placed within ½ inch of each other. The cast iron of which most boxes are composed, has a strong affinity for carbon, and will, therefore, decarbonize the pieces that are placed in too close proximity to it. The cover should be placed upon the box and sealed with fire clay. This is quite important, because the gases generated in the decomposition of the carbonizing material enter the steel in the expanded state, and assist in the operation.

Heating.

The depth of case depends upon the temperatures at which the pieces are heated and the length of time exposed to the full heat. This will give, as a rule, from 0.010 to 0.015 inch depth of case per hour of exposure.

Test wires are convenient to determine when the interior of the box has reached the temperature of the exterior. These wires are about 3-16 inch in diameter, and are inserted through holes in the cover; as the heating progresses, the wires are with-

drawn, and when of a uniform color the timing is begun. Boxes only of the same size or same width should be used at one time.

The most simple method of case hardening, after forging or machining, is as follows:

1. Carbonize at a temperature between 1,600-1,750 degrees Fahr.
2. Quench.

The above method has been used in the past to a very considerable extent, but is now being replaced by a more elaborate process.

The high temperature at which the piece is quenched in this treatment leaves a coarse, granular structure, which is not satisfactory and does not possess the requisite toughness for the majority of work.

The method used to a very considerable extent follows:

1. Carbonize at a temperature between 1,600-1,750 degrees Fahr. (1,700 preferred).
2. Cool slowly in the carbonizing compound.
3. Re-heat to 1,500-1,550 degrees Fahr. and quench.

This method, called the single reheating method, refines the grain of the interior, and makes the exterior exceedingly hard. This makes a tough structure and for all ordinary parts may answer the purpose.

Another class of work, such as gears, etc., demands the best treatment and the following is suggested:

1. Carbonize at a temperature between 1,600-1,750 degrees Fahr (1,700 preferred).
2. Cool clowly in the carbonizing compound.
3. Re-heat to 1,500-1,550 degrees Fahr.
4. Quench in oil.
5. Re-heat to 1,400-1,450 degrees Fahr.
6. Quench in water.
7. Draw in hot oil at a temperature from 300-450 degrees Fahr., depending upon the degree of hardness required.

This method refines and strengthens the interior, the uncarbonized part, and refines the exterior, the carbonized part. The last operation may be dispensed with, but for work requiring this special treatment, and to be exceedingly tough, both interior and case, this operation is desirable. It should be continued from one to three hours to insure the full benefit of the readjustment of the material to the particular heat condition, and the relieving of all internal strain. In steel given this heat treatment, the exterior will show a very fine structure, and the interior will probably show a silky fibrous structure.

Heating in lead is used extensively where only a slight variation in temperature is permissable. There are a number of unsatisfactory conditions: (1)The density of the lead and the necessity of holding the pieces in the lead by some mechanical means; (2) the purity of the lead. The lead should be as pure as possible, and especially free from sulphur. Trouble is sometimes experienced by the lead sticking to the work. This can be avoided by dipping the articles in a solution of cyanide of potassium and water. About one pound of the powdered cyanide to one gallon of boiling water should be used. This should be used cold and the articles permitted to dry before putting them in the lead bath. The pieces should be left in the lead long enough to come to the temperature of the bath; they should not be permitted to remain in the lead longer than to insure heating through. The pieces can be quenched in oil, water or brine, as preferred.

Heating in Salt.

A wide difference of opinion prevails as to the value of heating in salt for hardening purposes. Barium chloride has been used quite extensively, and seems to work perfectly clean at first, but after having been used for some time, it begins to pit the steel, which is probably due to the oxide dissolved in the metal salts. If the barium chloride is replaced, it then works satisfactorily again. As long as this constant replacement continues, good results are obtained.

There are other salts that seem to give satisfactory results. One of the large steel plants uses a mixture of calcium chloride and sodium chloride; about three parts of the former to one part of the latter. This combination melts at about 900 degrees Fahr. One advantage of the salt bath is, that no bad results come from the material of the bath adhering to the object. When the object is quenched, the salt is solidified and cracks off.

Tempering in Oil.

The most satisfactory way of drawing temperature is, doubtless, the oil bath. The medium used is a heavy, viscous oil of a high flash point, from 600 to 700 degrees Fahr. This can be maintained at a uniform temperature by the aid of a thermometer. The pieces should be permitted to remain in the oil until thoroughly heated. Excellent results are obtained by leaving the pieces in the oil some time, which seems to relieve the quenching strains. This, of course, is an expensive method of drawing but for small work is preferable to any other.

Magnetite Ores

A contract has recently been made between the American Grondal Co. and Moose Mountain, Ltd., licensing the latter to operate a plant for wet magnetic concentration and briquetting of magnetite ores under the Grondal patents in connection with its mining operations in Hutton township, district of Nipissing, Ontario. The Moose Mountain company for some time past has conducted both in Europe and the United States a complete investigation of the treatment of ores of the type it is proposed to use. This investigation has been under the direction of C. E. Herrmann, assistant to the president of Moose Mountain, Ltd. He has consulted freely with Joseph Sellwood, of Duluth, vice president and general manager of the Moose Mountain company, and also with L. B. Miller, of Oglebay, Norton & Co., Cleveland. All sampling and analytical work in connection with experimental tests have been in charge of F. A. Emmerton, Cleveland.

A plant with a nominal capacity of about 375 tons per day of finished material is now in course of construction at Sellwood, Ontario, and is expected to be in operation during the season of 1912. The construction work is in charge of the company's superintendent, F. A. Jordan. Alex Laughlin & Co., Pittsburgh, are construction engineers for the Moose Mountain company and have retained Hamilton & Hansell, of New York, as consulting engineers regarding features of the plant directly affecting the Grondal process. The product from the plant will be in the form of briquets containing 63 per cent metallic iron and about 0.02 per cent phosphorus.

The Moose Mountain company has available a vast tonnage of ore that may be utilized by concentration and in the event of the commercial success of the plant now in course of construction the productive capacity will be greatly increased.

The Steel Co. of Canada announces that next year it will make additions to its plant at Hamilton, Ont., at a cost of $2,000,000. The plans provide for a rod, blooming and billet mills and two 60-ton continuous open hearth furnaces.

New Line of Automatic Controllers

The Electric Controller & Mfg. Co., Cleveland, is now building a line of automatic controllers designed for the specific purpose of insuring the greatest convenience in the control of motor-driven machinery. It has been estimated that the output of many machines can be increased 20 per cent by the central grouping and convenient arrangement of all of the operating levers. The controller consists of a small operator's switch, Fig. 1, and an accelerating unit, different types of which were illustrated in THE IRON TRADE REVIEW, April 6, 1911, page 669. The controllers are built in three types: (1) To secure non-reversing and dynamic braking; (2) reversing without dynamic braking and (3) reversing and dynamic braking. In each type four different forms of accelerating units are offered. These units vary in design from the simple train of accelerating switches to a unit having a fused service switch, a train of accelerating switches and complete circuit-breaker features.

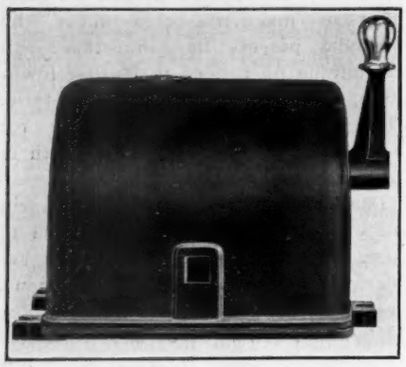


FIG. 1—THE SMALL OPERATOR'S SWITCH

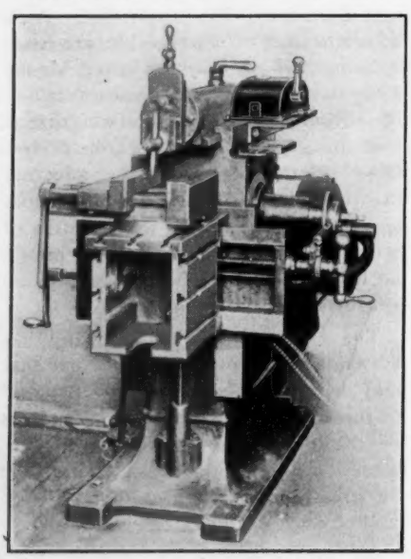


FIG. 2—MOTOR-DRIVEN SHAPER, EQUIPPED WITH AUTOMATIC CONTROLLER

The accelerating unit automatically accelerates or decelerates the motor through the action of series wound accelerating switches, which not only serve as switches, but also as current limit relays. When the current in the winding of one of these switches exceeds a predetermined value, the switch locks open and cannot close until the current is reduced to the proper value. When the operator's switch is thrown to the running position, current flows through the motor, through the starting resistance and the coil of the first series wound accelerating switch. As the motor accelerates, the current drops and when it reaches the correct value, the first accelerating switch closes, cutting out a portion of the starting resistance. The succeeding accelerating switches operate similarly, ultimately cutting out all of the starting resistance and putting the motor across the line. By throwing the operator's switch to its original position, the motor is disconnected from the line and consequently stops. Different positions of the handle of the different types of operator's switches provide for drifting, reversing, or rapid stopping by dynamic braking. Dynamic braking is secured by a change of connections, accomplished by the operator's switch, which first inserts all the starting resistance in series with the armature. The motor is then quickly brought to rest by automatic dynamic braking, the accelerating switches in this case acting as decelerating switches by cutting out, step by step, the resistance as the current, generated by the motor, decreases due to the slowing down of the motor.

This automatic controller limits the acceleration and deceleration current at all times to a safe value; it accelerates and decelerates the motor in the minimum amount of time and automatically varies the time of acceleration and deceleration, depending upon the load which the motor has to start and stop. By limiting the current, both in starting and stopping, it limits all mechanical strains on the motor and driven machinery; it also obviates the use of mechanical clutches on many motor-driven machine tools and it provides no-voltage protection; if the voltage fails, the switches drop open and upon the return of voltage they automatically close in their regular method and sequence, again accelerating the motion to full speed.

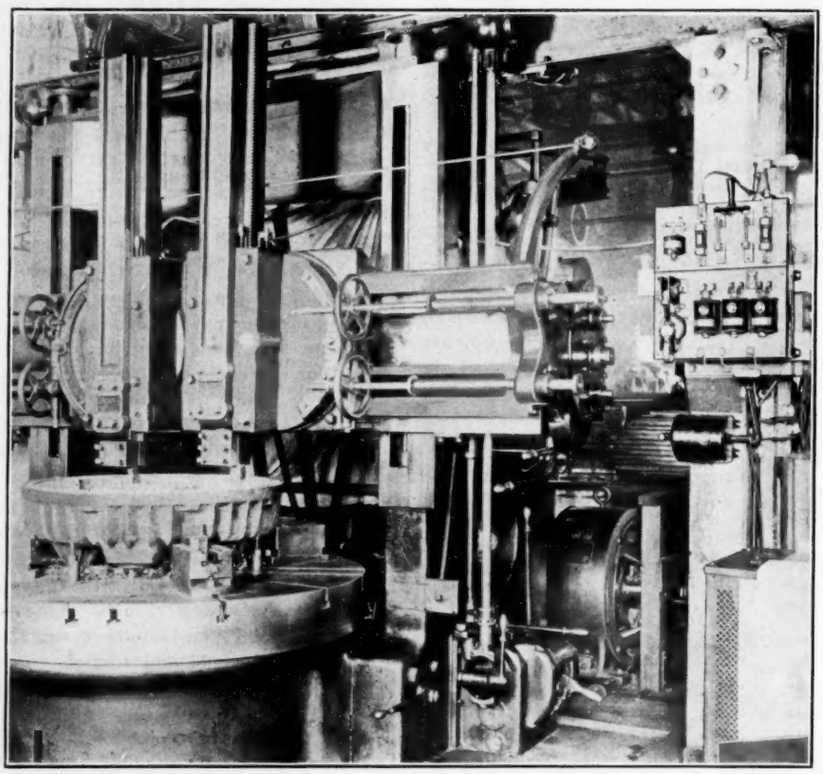


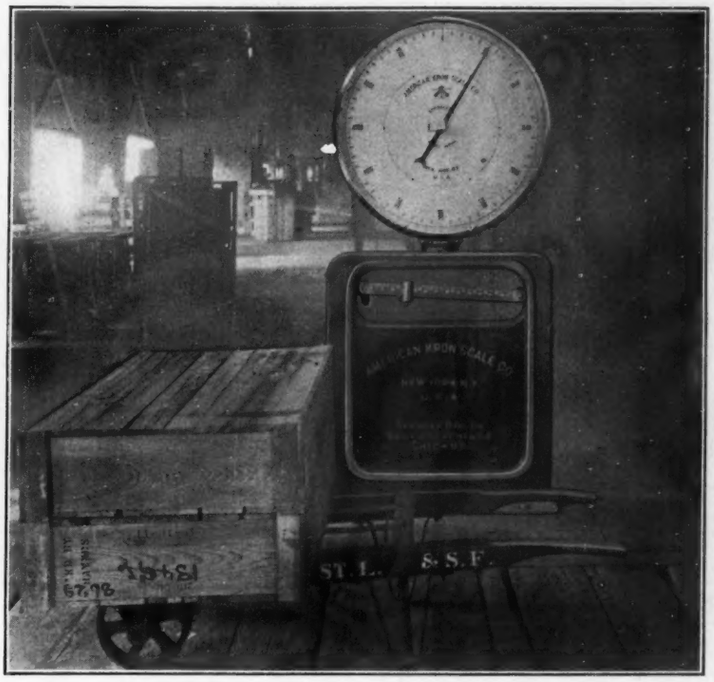
FIG. 3—MOTOR-DRIVEN BORING MILL, EQUIPPED WITH AUTOMATIC CONTROLLER

The H. W. Johns-Manville Co., New York City, has removed its Birmingham, Ala., office from 1220 Empire building to 606 Chamber of Commerce building. This office is under the management of W. H. Fleming.

A New Automatic Scale

Every foundry and steel plant has constant use for a scale for weighing charges of pig iron, scrap, coke, etc., and also for weighing finished castings or articles prepared for shipment. For this work the ordinary platform beam scale has certain disadvantages, which can be overcome by a properly built automatic scale. An automatic scale is particularly useful in foundries for weighing charges, where speed and accuracy are essential elements of the work.

To meet these conditions the American Kron Scale Co., represented by Spencer Otis Co., Chicago, has recently placed on the market an automatic scale that embodies a number of new features. The chief distinguishing characteristic of this scale is that it has no springs, weights or sliding poises and is made entirely of metal. As shown in the accompanying illustration, the scale consists simply of a platform and a dial which indicates the weight. A dead-beat pointer is used so that the dial can be read instantly. It is built regularly in capacities ranging from 500 to 5,000 pounds, but can be constructed up to 150 tons capacity.



KRON AUTOMATIC SPRINGLESS SCALE

The mechanism of the scale is exceedingly simple. The platform, with its connecting levers, is exactly similar to that found on any standard platform scale. Behind the dial, which is unusually large in order that it may be read easily and quickly, are two short, solid steel cylinders carried on a linkwork so that the whole is very similar in its construction to an ordinary fly-ball steam engine governor. The weights rise and fall through an arc of a circle similar to governor balls, except that their displacement is effected by the weight on the scale platform instead of by centrifugal action. The nearer the weights approach to a horizontal position, the greater is the force which they exert on the tension rod leading to the scale platform. Their displacement is, therefore, proportional to the weight on the platform. By a simple linkwork the movement of the scale mechanism is communicated to the pointer on the dial.

It is thus seen that in using the scale to weigh simple articles there are no adjustments to be made. Each scale, however, is provided with a tare beam, shown under the dial in the illustration, by means of which the tare weight of the truck, car or package containing the articles being weighed, is automatically deducted. It is provided with a sliding poise which is set to correspond with the weight of the truck or car. The dial pointer then indicates the actual weight of the material or articles on the scale. This feature is particularly desirable for foundry use where coke and pig iron are carried in charging cars or buggies. In this case each car has conspicuously painted on its side its weight empty, and when it is run on the scale platform all the attendant has to do is to set the poise on the tare beam to correspond with the weight of the car;

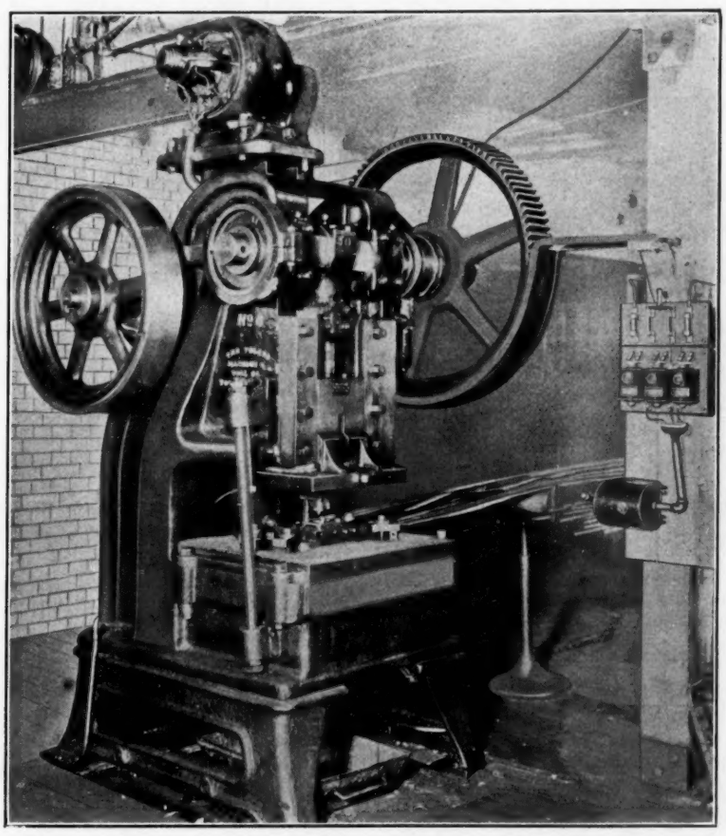


FIG. 4—MOTOR-DRIVEN PUNCH PRESS, EQUIPPED WITH AN AUTOMATIC CONTROLLER

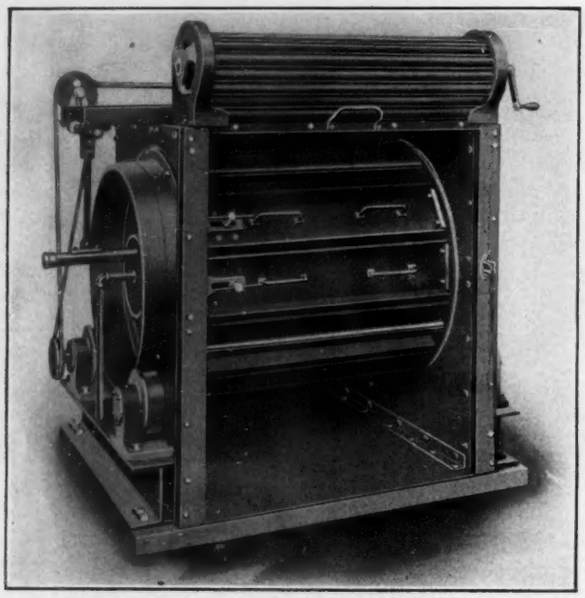


FIG. 1—SAND BLAST TUMBLING BARREL WITH SLIDING DOOR RAISED

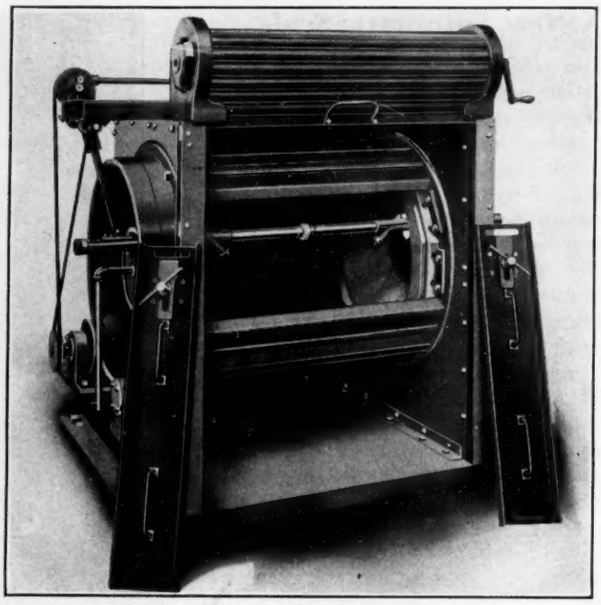


FIG. 2—SAND BLAST TUMBLING BARREL WITH TWO STAVES REMOVED FOR CHARGING

the pointer then indicates the actual weight of the charge. The operation can be further simplified by loading the cars with lead so that they are all brought to exactly the same weight when empty. It is then unnecessary to change the position of the poise on the tare beam.

Sand Blast Tumbling Barrel

For cleaning castings, tumbling barrels equipped with a sand blast device are coming into more general use in this country, although these machines have been extensively used in England and Germany for a number of years. An exceedingly novel machine of this type, built by the J. D. Smith Foundry Supply Co., Cleveland, is shown in the accompanying illustrations. It will be noted that the tumbling barrel is entirely enclosed and that the nozzles drive the sand, under pressure, against the castings in the interior of the barrel. A rolling lift door at the front of the machine makes it practically dustproof, although an exhaust is provided at the rear, or the machine can be built with a grating to exhaust through the bottom.

The mill, with the rolling lift door raised, is shown in Fig. 1. The shell of the barrel is made of steel channels with sand spaces between the channels so that they can be easily removed when worn without taking down the barrel. The two channels through which the barrel is charged and discharged are in position in Fig. 1, but in Fig. 2 they have been removed. These two channels are equipped with a unique locking device which permits of the easy removal of these sections. The sand blast nozzles are also illustrated in Fig. 2, and it will be noted that they turn downwardly, driving the sand against the castings as they are tumbled in the barrel.

The barrel is furnished with either fixed or swinging nozzles, depending upon the nature of the work to be cleaned. The rollers on which the

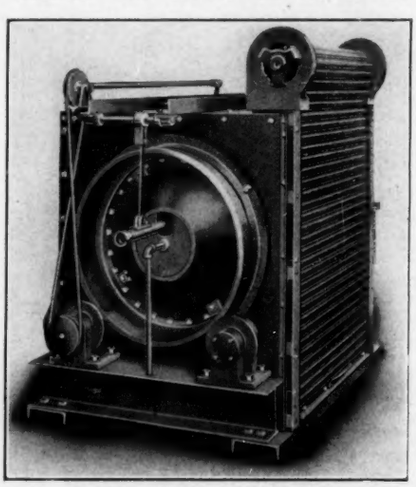


FIG. 3—END VIEW OF SAND BLAST TUMBLING BARREL

barrel operates are fitted with roller bearings, felt washers being used to keep them free from the dust and dirt. An end view of this sand blast tumbling barrel is shown in Fig. 3, which clearly shows the connection is of steel construction throughout and all the wearing parts, with the exception of the staves and the headliners, are outside of the housing and are not subjected to the wearing action of the sand and dust. This machine can be furnished with either a sliding or rolling lift door.

A Rare Element

Selenium is a rare and little known element described by the United State geological survey as having its greatest use in the manufacture of certain glasses to which it gives a red color and in coloring enameled ware red. It is used to overcome the natural green color of ordinary glass and also in making glass of a distinct red color such as that used on railroads for signal lights. Selenium has the peculiar property of being a very poor conductor of electricity in the dark and a fairly good conductor in the light, and a number of electrical inventions depend on this peculiarity. It has been used in experiments in telephoning along a ray of light, and for transmitting sounds and photographs from one place to another by means of a telephone or telegraph wire.

Manganese ore formed the chief item of the metallurgical exports from India during the past year and amounted to 572,979 tons, an increase over the previous year of 72,635 tons, or 14.5 per cent in quantity and 16.2 per cent in value. Of this total, Great Britain took 188,608 tons, or 32.9 per cent, and the United States 130,850 tons, or 22.8 per cent. There was also shipped to France 100,390 tons, and to Belgium 137,680 tons. The value of the pig iron exports was $133,500, that of chromite, $35,000; wrought iron, $48,500; scrap iron, $38,600, and tin, $52,600.

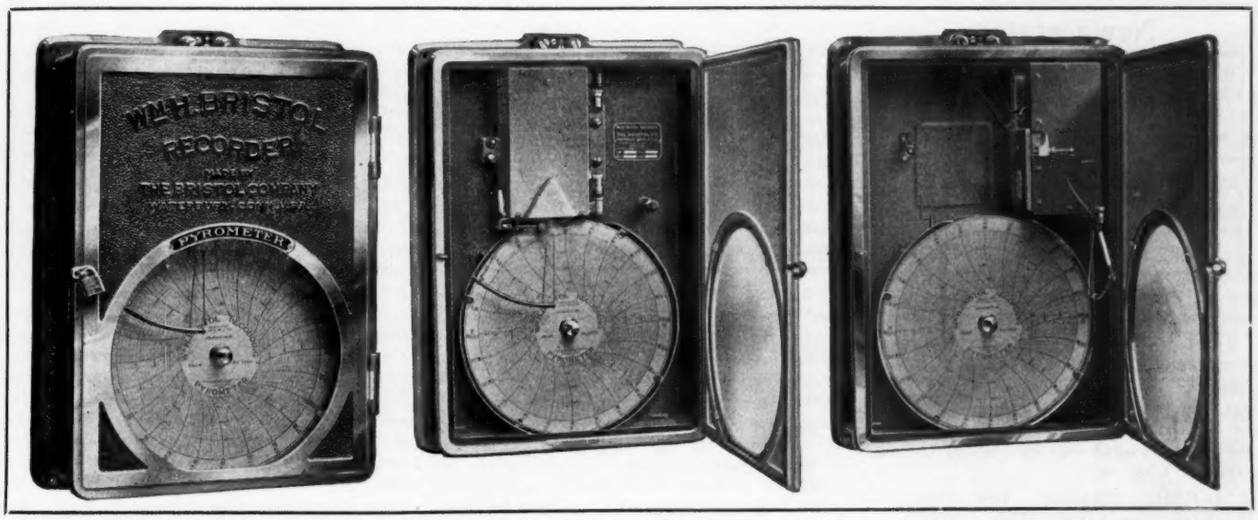


FIG. 1—RECORDER, READY FOR OPERATION

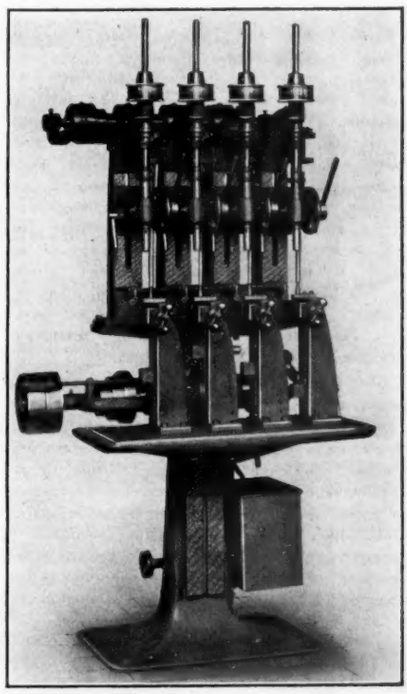
FIG. 2—INTERIOR VIEW OF RECORDER

FIG. 3—RECORDER IN POSITION FOR INSERTING NEW CHART

Bristol Recording Instrument

To meet the demand for a frictionless ink type recording instrument, which will accurately record fractions of millivolts and which is adapted for use as a recording electric pyrometer, the instrument shown in the accompanying illustrations has been developed by the Bristol Co., Waterbury, Conn. This type of recorder has been thoroughly tested in practical service during a period of two years. A frictionless ink recorder is utilized with a hinged electrical movement carrying a retaining receptable for marking fluid which extends over the path of the recording tip and is provided with means for periodically making contact with the source of marking fluid and the chart. The recorder, ready for operation, is shown in Fig. 1 and Fig. 2 is an interior view illustrating the galvanometer movement case hinged to the back of the instrument and carrying the inking pad in front of the recording arm. Fig. 3 shows the sensitive electrical movement swung to one side for inserting a new chart. A gold tube, open at both ends, is carried at the end of the recording arm at right angles to the surface of the chart. The inking pad is suspended from the case of the electrical movement and is curved to correspond with the arc covered by the motion of the end of the recording arm.

When the movement is swung back into its operating position, as shown in Fig. 2, the recording arm can swing free, accommodating itself to the position corresponding to the delicate current which is to be measured. The clock which revolves the chart at the desired speed, also automatically presses the inking pad toward the chart every 10 seconds, contacting one end of the capillary tube with the chart and the opposite end simultaneously comes in contact with the ink pad. A fine dot is left on the chart and the capillary tube is replenished with ink from the pad. The recording arm thus carries a constant supply of ink and its perfect balance is always maintained. The electrical movements used in these recorders are made by the Wehton Electrical Instrument Co. Although the most important applications of these recording instruments have been for pyrometers, they have also been uesd for electrolytic research, recording voltmeters and recording shunt ammeters.



A FOUR-SPINDLE STAYBOLT DRILL

A Four-Spindle Staybolt Drill

In view of the recent recommendation of the Interstate Commerce Commission regarding the use of tell-tale holes in boiler staybolts, the four-spindle staybolt drill built by the Foote-Burt Co., Cleveland, shown in the accompanying illustration, is of particular interest at this time. While this drill is not a new machine, it has been redesigned to withstand the heavy duty to which it is subjected by the use of high speed steel.

The machine has capacity of 4 5-16 inch drills and will take in staybolts from ¾ inch to 1¼ inches in diameter and from 3 to 15 inches long. Each spindle has three independent speeds and two changes of power feed which is equipped with an automatic knock-off, which can be set for any depth within the capacity of the machine. Both feed and speed can readily be changed on any spindle without changing the other spindles. Specially designed chucks with a quick-acting gripping mechanism center the staybolts underneath each spindle and hold them rigidly in position. The drill runs in a hardened bushing, insuring its starting central with the piece held in the chuck. The machine is equipped with an oil pump and a return tank which permits the use of liberal quantities of lubricant. The machine can readily be operated by a boy, who can keep all four spindles running at their maximum capacity. The staybolt chucks can be easily removed and the machine is then available for a variety of sensitive drilling work. The distance between spindles is 6½ inches and the maximum distance between the nose of the spindle to the top of the table is 36 inches.

New Catalogs

RAILWAY CYLINDER CONTROLLERS.—The General Electric Co., Schenectady, N. Y., has recently issued a bulletin devoted to cylinder controllers for railway service. This bulletin supersedes the company's previous publication on this subject.

EXPULSION FUSES AND FUSE HOLDERS.—A bulletin issued by the General Electric Co., Schenectady, N. Y., illustrates and describes its line of expulsion fuses and fuse holders. These are for use on circuits carrying voltages up to and including 110,000.

HEAT NUMBERS OF RAILS.—Robert W. Hunt & Co., 1121 The Rookery, Chicago, inspectors of locomotives, rails and fastenings, etc., have issued a card which explains the systems of branding and heat number stamping employed by the various manufacturers of steel rails.

GRAPHIC METERS FOR SWITCHBOARDS.—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a bulletin describing its graphic meters for switchboard service. The bulletin contains a number of illustrations of the meters, together with reproductions of typical charts obtained from them.

MILLING MACHINES, GRINDERS AND SCREW SLOTTING MACHINES.—The Garvin Machine Co., Spring and Varick streets, New York City, has issued several bulletins describing and illustrating its vertical and plain milling machines, rapid screw slotting machines and cutter and surface grinding machines.

COMMUTATOR GROOVING MACHINES.—In a recently issued bulletin, the General Electric Co., Schenectady, N. Y., describes two types of a machine which it has designed for keeping the commutators of railway motors grooved. One machine is portable and the other stationary; both require very little space for operation.

MOTORS AND GENERATORS.—A bulletin recently issued by the Ideal Electric & Mfg. Co., Mansfield, O., contains information concerning the construction and operation of that concern's line of direct current motors and generators. Several novel features have been incorporated in the design of these machines and these are fully explained.

ELECTRIC RAILWAY EQUIPMENT.—The General Electric Co., Schenectady, N. Y., has issued a 54-page catalog devoted principally to illustrations of electrical equipment as installed by various electric roads throughout the country. These include views of rolling stock, portable sub-stations, and interior views of power plants, both main stations and sub-stations.

RIVETS.—The Inland Steel Co., Chicago, has issued a booklet on rivets. This concern recently completed a new rivet manufacturing plant at Indiana Harbor, Ind., and is now prepared to take orders for all rivets, ½ inch and larger in diameter, ¾ to six inches in length, inclusive, and with button heads, cone heads, steeple heads and countersunk heads. The booklet also contains data on a series of rivet tests.

AIR COMPRESSORS.—A new catalog issued by the American Air Compressor Works, 26 Cortlandt street, New York, is devoted to that concern's line of air compressors. It includes complete specification lists, code words, tables containing data on the flow of air through an orifice and the horsepower required to compress free air, etc., and is handsomely illustrated. A portion of the booklet is devoted to a description of the "Fairhurst" air lift pumping system.

VALVES.—The Kelly & Jones Co., Greensburg, Pa., has issued a catalog devoted to its line of regrinding, high pressure valves. These valves are made of metal which conforms in formula to United States navy requirements and are so designed that they may be repaired without disturbing the pipe line. The catalog contains a large number of illustrations, as well as dimension tables, price lists, etc.

RESISTANCE UNITS.—A bulletin issued by the Wirt Electric Specialty Co., Germantown, Pa., describes that concern's line of insulating units of the "Di-el-ite" brand. The insulating material employed in connection with these units is a mixture composed principally of quartz and can be subjected to a temperature of 800 degrees Fahr. without injury. These units are recommended for use wherever electrical resistances of strong, durable and efficient character are required. They are especially adapted for use in connection with signalling systems, telephone and telegraph systems, motor regulation, etc.

LATHES.—The R. K. LeBlond Machine Tool Co., Cincinnati, has issued a 144-page catalog devoted to its extensive line of lathes. This includes the following designs: 14 to 20-inch swing, without back gear; 14 to 24-inch swing, single or double friction back-geared; 12 to 24-inch swing, single or double back-geared, and a number of models of the heavy duty type. The latter range between 17 to 21-inch and 25 to 50-inch swing and may be furnished with or without back gear or friction back gear, either single or double. The lathes are furnished for pulley or motor drive. The catalog contains complete information regarding dimensions, lathe attachments, etc.

FURNACES.—In a handsomely-illustrated 32-page catalog, Tate, Jones & Co., Inc., Pittsburgh, illustrate and describe its extensive line of heating, forging and welding furnaces. The work includes descriptions of oil or gas fired tool dressing furnaces, blacksmith forges, portable and stationary rivet forges, pipe bending furnaces, bolt heating furnaces, forge furnaces, flue welding and rod heating furnaces, etc. Interesting plan and sectional views are also included of an oil or gas-fired tire heating furnace. Burners, appliances and accessories are also described, as well as a portable fuel oil heater. The catalog also contains interesting information on furnace efficiency.

WATER TUBE BOILERS.—A catalog issued by the Oil City Boiler Works, Oil City, Pa., is devoted to that concern's line of Geary water tube boilers. These boilers are produced in capacities ranging from 30 to 650 horsepower, and in different dimensions to meet the varied requirements as to space, draft, fuel, etc. The catalog includes a quantity of information concerning the construction of these boilers and contains illustrations and cross-sectional views showing the boilers as installed for various purposes. A long list of users of Geary boilers concludes the catalog. The company announces the recent completion of an extensive addition to its plant.

DUPLEX STEAM-DRIVEN COMPRESSORS.—A 20-page bulletin, published by the Ingersoll-Rand Co., 11 Broadway, New York City, is devoted to duplex steam-driven compressors. These machines are of rigid construction with large bearing surfaces and are equipped with mechanically-actuated air intake valves with large direct passages and cushioned discharge valves. The air cylinders have water-jacketed barrels and heads, the latter being hooded for the admission of cool air. The smaller types of compressors up to 15-inch stroke have overhung cylinders. On the larger sizes the air cylinders are supported on a strong foot-piece resting upon a sole-plate on the foundation.

HEATING AND VENTILATING EQUIPMENTS.—A 94-page book, entitled "Heating and Ventilating," has recently been issued by the Green Fuel Economizer Co., Matteawan, N. Y. While primarily describing and illustrating the Green line of fans, blowers, exhausters, heating coils and other heating and ventilating equipment, the volume contains a large amount of information concerning the various problems which confront the heating and ventilating engineer. Numerous data are included which deal with air pressures and velocities, the amount of pressure and horsepower consumed by friction of the air in passing through pipes, etc. Particular attention also is paid to installations in manufacturing establishments.

IRON AND STEEL PRODUCTS.—The Republic Iron & Steel Co., Youngstown, O., has issued a handsome leather bound volume devoted to the numerous iron and steel products which it manufactures at its various plants. These products include pig iron, structural steel, merchant iron and steel, shafting, railway track materials, bolts, nuts, screws of all kinds, etc. The book includes a directory of the various ore, blast furnace, coal and coke, stone quarry and rolling mill properties, and shops and factories owned by the company. The tables included contain data on wire gages, weights and areas of square and round bars. The book also contains the usual profiles and cross-sections of shapes.

HIGH VACUUM JET CONDENSERS.—A new bulletin issued by the Wheeler Condenser & Engineering Co., Carteret, N. J., describes that company's design of high vacuum jet condenser. The chief advantage claimed for this type of apparatus is the great extent to which the heat absorbing capacity of the cooling water is utilized. The latter is discharged from the bottom of the condenser at nearly the temperature of the steam; at the same time the outgoing, non-condensing gases come into contact with the water entering at the top of the shell, thus cooling them to a satisfactory temperature. A number of illustrations are included in the bulletin as well as several tables which contain data concerning the dimensions and efficiency of the condenser.

CHAINS AND SPROCKETS.—An exceedingly interesting treatise on power chains and sprockets, by Lucius M. Wainwright, is included in the 96-page catalog issued by the Diamond Chain & Mfg. Co., Indianapolis. The discussion contains much valuable information for the user of this type of equipment and many valuable suggestions are given for their proper application. The catalog is handsomely illustrated with views of chain devices in various manufacturing establishments and the application of this form of power transmission to various kinds of machines is also shown by many illustrations. The extensive line of power chains made by this company is shown and detailed descriptions are included of sizes, types, etc. The work is concluded with many valuable tables such as formulas for calculating the length of chain, diameters of sprocket wheels, block center and twin-roller chains and for roller and built-up block chains and standard sprocket diameters for chains of various types.

Developments on the New York stock exchange last week were quite featureless, but the general tone displayed was better and prices moved upward.

Monday, the market was dull and reactionary, Steel common leading the decline. Tuesday, stocks rallied and closed stronger and higher, copper stocks leading the movement; copper metal was advanced to 13 cents. Wednesday the market was characterized by more activity but reaction set in in the late dealings and much of the early gain was wiped out; copper shares were strongest. Thursday, the entire list rallied and closed stronger and higher under the leadership of Union Pacific; copper advanced to 13¼ cents; grain markets lower. Friday, the market was active, but after reaching a new high average on the movement, prices declined sharply and closed with losses of 1 to 2 per cent. Saturday the market was dull and narrow.

In spite of heavy shipments abroad of gold, money rates continued easy. Money on call ranged between 2½ and 2¼ per cent. The demand for time money was characterized by indifference on the part of borrowers. The actual condition of clearing house institutions showed loans decreased $13,510,000; net deposits decreased $16,963,000; total reserve, $408,156,000; and the excess of reserve $8,972,300, a decrease of $1,430,550. Non-member banks and trust companies showed loans increased $5,117,400; net deposits increased $3,616,200; reserve on deposit decreased $172,800, and the percentage of reserve 18.8, unchanged. Bank clearings showed a decrease of about 8 per cent, compared with the preceding week, but were 18.5 per cent above the corresponding week last year. Commercial failures numbered 293, compared with 230 the preceding week and 212 the corresponding week last year. Shares were sold to the number of 2,694,600, compared with 3,829,870 the preceding week and 1,144,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $20,390,000, compared with $19,086,000 the preceding week and $7,491,000 the corresponding week last year.

	Clos'g Quo. Nov. 25	Changes in week	Annual Meeting date 1911	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	3¼	.....		$19,820,000		.....	
Allis-Chalmers, pr	13	—2	Nov. 2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	11½	.....	Feb. 1	41,233,300		1¾ Q.	
American Can, pr	90	.....		41,233,300	7 cum.	1¼ Q.	Oct., 1911
Am. Car & Fdy	55	—1	June 29	30,000,000		½ Q.	Oct., 1911
Am. Car & Fdy., pr	116⅛	+⅛		30,000,000	n. c	1¾ Q.	Oct., 1911
American Loc	36½	.....	Oct. 17	25,000,000	5	1¼ Q.	Aug. 1908
American Loc., pr	103	+ ½		25,000,000	7 cum.	1¾ Q.	Oct., 1911
American Ship	48	+ ⅛	Oct. 11	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	105	.....		7,900,000	7 cum.	1¾ Q.	Oct., 1911
Am. Steel Foundries	34¼	+ ¼	Dec. 7	17,184,000		1 Q.	May, 1911
Barney & Smith	15	.....	June 6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	70	.....		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	30¾	+ ¾	April 4	14,862,000		.....	
Bethlehem Steel, pr	59½	+1½		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43¾	— ⅛	Mar. 21	45,000,000*	5	1¼ Q.	Nov., 1911
Cambria Iron	44½	+ ½		8,468,000*	4	2 S. A.	Oct., 1911
Chicago Pneumatic Tool	45½	+ ½	Feb. 20	6,485,800	4	1 Q.	Oct., 1911
Colorado Fuel	28	.....	Oct. 16	34,235,500		1¾ Q.	April, 1902
Crucible Steel	11¾	.....	Oct. 18	24,578,400		3½ Q.	
Crucible Steel, pr	81½	+1½		24,463,500	7 cum.	1¾ Q.	Dec., 1911
Empire Steel	6	.....	Feb. 22	1,254,770		.....	
Empire Steel, pr	40	.....		2,500,000	6 cum.	1 S. A.	July, 1911
Fay & Egan	70	.....	Feb. 21	1,000,000	6 cum.	3 S. A.	Feb., 1911
Fay & Egan, pr	110	.....		1,000,000	7 cum.	1¾ Q.	Nov., 1911
General Electric	155¾	+1¼	May 9	65,179,600	8	2 Q.	Jan., 1912
Harbison-Walker	45	.....	Jan. 16	18,000,000		½ Q.	Dec., 1911
Harbison-Walker, pr	96¼	.....		9,600,000	6 cum.	1½ Q.	Oct., 1911
International Pump	34	— ½	Dec. 12	17,762,500		1 Q.	Nov., 1910
International Pump, pr	83	+1		11,350,000	6 cum.	1½ Q.	Nov., 1911
Lackawanna Steel	32	+1	Mar. 4	34,978,000		.....	
Lake Sup. Corp	27¼	+ ¼	Oct. 4	40,000,000		.....	
New York Air Brake	55	—2	Mar. 8	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	94	.....	Feb. 8	8,500,000	6	1½ Q.	Dec., 1911
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum.	1½ Q.	Nov., 1911
Otis Elevator Co	68	.....	Mar. 20	6,375,000	1	1 Q.	Oct., 1911
Otis Elevator Co., pr	97	—1		6,310,000	6 n. c.	1½ Q.	Oct., 1911
Pa. Steel	60	.....	May 8	10,750,000		.....	
Pa. Steel, pr	102⅞	— ⅛		16,500,000	7 n. c.	3½ S. A.	Nov., 1911
Pittsburgh Coal	18⅞	— ⅝	Feb. 10	28,104,600		.....	
Pittsburgh Coal, pr	83⅞	—1⅜		27,071,800	7 cum.	1¼ Q.	Oct., 1911
Pittsburgh Steel Co., pr	101	.....	Oct. 31	7,000,000	7 cum.	1¾ Q.	Sept., 1911
Pressed Steel Car	34	— ¼	Feb. 15	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	100	.....		12,500,000	7 n. c.	1¾ Q.	Nov., 1911
Pullman	158¾	+ ½	Nov. 8	120,000,000	8	2 Q.	Nov., 1911
Railway Stl. Spring	32⅞	+ ⅛	Mar. 2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	102⅞	+1⅞		13,500,000	7 cum.	1¾ Q.	Dec., 1911
Rep. Iron & Steel	23	.....	Oct. 18	27,191,000		.....	
Rep. Iron & Steel, pr	83¾	+2		25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	43	.....	Mar. 15	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....		6,700,000	7 n. c.	1¾ Q.	Oct., 1911
U. S. Pipe & Fdy. Co	14½	+ ⅝	June 28	12,106,300		1 Q.	Dec., 1910
U. S. Pipe & Fdy. Co., pr	46⅛	+3⅛		12,106,300	2	1¼ Q.	June, 1911
U. S. Steel	64¼	+ ¼	April 17	508,302,500	5	1¼ Q.	Dec., 1911
U. S. Steel, pr	109¼	— ½		360,281,100	7 cum.	1¾ Q.	Nov., 1911
U. S. Steel 5s	101⅞	— ¼		463,798,000	5	.....	
Va. Iron, Coal & Coke	60	—1⅛	Sept. 19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	65¾	— ¼	July 26	3,998,700*		1¾ Q.	Oct., 1911
Westinghouse Air Brake	153⅜	+ ⅜	Oct. 3	13,750,000*		5 Q.‡	Oct., 1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special.

Copper Stocks.

New York.—Amalgamated Copper closed 63, a net gain of 1¾.

Boston. — Butte Coalition closed 17¾, a net gain of ¾; Calumet & Arizona closed 56, a net gain of 2¾; Calumet & Hecla closed 400, a net gain of 10; North Butte Mining closed 22¾, a net loss of ¾; Quincy Mining closed 66, a net gain of 6.

Financial Notes.

The General Electric Co. has declared the regular quarterly dividend of 2 per cent, payable Jan. 15.

The Barney & Smith Car Co., of Dayton, O., has declared the regular quarterly dividend of 2 per cent on preferred stock, payable Dec. 1.

The Republic Iron & Steel Co. has declared the regular quarterly dividend of 1¾ per cent on preferred stock, payable Jan. 2.

THE IRON TRADE REVIEW

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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6,112
June	6,124
July	6,138
August	6,152
September	6,161
October	6,172

November 30, 1911

Cutting the Extras

Apart from the general declines which have been occurring in the base prices of steel products, there has been considerable cutting of the extras. During the period of the controlled market, these extras were quite rigidly maintained, but in the close competition of the past few weeks the customary extras have in many cases been shaded. In speaking of extras, we refer not only to the regular lists of extras on such commodities as merchant bars, spikes, wire, wire nails, etc., but also to differentials for analysis, finish, shape, etc., in such commodities as plates and sheets, in fact all the steel commodities which are sold at recognized base prices for certain descriptions, and at advances over the base price for various other descriptions.

The ordinary market quotations, being quotations of base rates, do not in some cases represent the extreme of the declines which have occurred, because extras have also been cut, and thus net prices on the average specifications have declined more than have base prices.

Experienced sales managers are making a special effort to instill in the minds of their representatives the importance of maintaining the extras even though the base price must suffer. They recognize that the extras have been carefully worked out from experience and are entitled to respect even though the pressure for business makes it necessary to cut the base rates. They know from experience, moreover, that once the extras are cut it is very difficult to restore the old rates. A new practice has been grafted on the trade, and reformation can be carried through only with great effort. A cut in the base price, on the other hand, means little. The next quotation made the customer may be higher, or it may be lower. The quoting of a given price sets no precedent; it is merely the seller's bid for the business. Not so with the extras; they represent a trade practice and if a buyer is once given a concession on the extras, he expects to receive the same concession on the next purchase, no matter what the base price may be.

In the case of some commodities, the extras are proving rather profitable at the present time, for they are adjusted to normal conditions when the productive units are fully engaged and ordinarily represent a reduction in output entailed in making the particular section or size. When, however, the productive unit is not likely to be fully engaged in any case, it is very profitable to make the material involving an extra, because the theoretical loss in output is not actually experienced, there being surplus capacity. These cases, indeed, are the ones the sales manager needs to watch most carefully, for while no actual loss may be involved in cutting the extras when the tonnage is light, the continuing of the same reduced extra into a time when demand is heavy means an actual loss, for then the output is lower than it might be.

In the case of other commodities, it is more necessary to insist upon the full extras when business is light than when it is heavy, for when business is light the quantities ordered of a given size or description are abnormally light and the additional cost of making the material is particularly great. In such cases, an actual loss may be experienced in making the special material, even though in times of liberal specifications the list extra involves a fair profit.

In the sheet trade, the market has been particularly wide open upon the special finishes. Some finishes which in the past have sold at large advances over the straight market for one pass cold rolled material have in some cases been sold at very slight advances, and some mills are charged with extremely loose practice in this respect, in that they have sometimes taken business at several dollars per ton below the price of their nearest competitor. Such sellers, it is suggested in some quarters, are frequently the very ones which boast that they have not been selling sheets below such and such a price, naming a price which upon one-pass cold rolled material may possibly have been shaded $1 or $2 a ton by some of the other mills. Superficially the mill may be getting good prices, but considering the cost of producing the special finishes, the prices may actually be extremely low.

The matter of maintaining the practices of the trade in the matter of extras is of particular importance at this time, when the whole selling trade is nervous over suggestions which have been made as to the interpretation of the Sherman law. There are a great many men who insist that it cannot possibly be contrary to this interesting law for competitors to meet formally or informally and discuss general trade conditions, and even to declare to each other their intentions as to selling policies. It is not necessary to

attempt to confirm or refute this view for the purpose of the present discussion. Whatever may be the legal situation, the condition is that the producers do not so meet and discuss matters. They have not done so for months, and they evince no intention of doing so in the near future. At the same time, it is perfectly clear that it cannot be made illegal for sellers to adhere to trade customs which are of long standing. There are printed lists of extras upon various finished steel products and there can be no legal decision requiring sellers to depart thus and so much from the established trade customs. On the other hand, to do so is to renounce an important protection to the trade, and should such a list be destroyed there might be a very serious question as to what steps could fairly be taken to restore it or formulate a new list. The trade has these practices and in the present uncertainty as to the extent to which price regulation may go, the best interest of both sellers and buyers—for the latter are too well educated in business affairs to desire an unsettled market—is that the established lists and trade customs should be rigidly maintained.

The buyer can accomplish all he wishes to accomplish in the placing of an order, which is to buy the material in question for the least money possible, by striving to secure the lowest base price possible. There is no advantage to him in securing a concession in the extra instead of in the base price. The seller can accomplish all he desires to accomplish, which is to obtain as much business as possible, by making the base prices such as will obtain the orders, without touching the established extras. Neither buyer nor seller has a chance for temporary gain in disturbing the extras which cannot equally as well be effected by modifying the base price. On the other hand, both parties will in the long run suffer if established extras and trade customs are disturbed. Let them be maintained at all hazards. There is danger of losing ground which it would be very difficult.

Business and Presidential Years

A commonly accepted belief is that years in which presidential elections are held are periods of business depression and one frequently hears nowadays expressions of doubt as to whether 1912 will be a prosperous year for business because a president is to be elected. Examination as to the facts concerning business conditions during presidential years is therefore of interest at the present time.

George H. Hull, in a book issued entitled "Industrial Depressions", prints a diagram showing the presidential election years and years of industrial depression from 1812 to 1908. This diagram shows that during that period there have been 13 years of industrial depression and that they have come at the same time as presidential years only twice, namely in 1896 and in 1900. "When," says Mr. Hull, "the presidential election affects the industries at all, it is either a short-lived effect like the case of 1896, when the cause is known to everyone, or it is so moderate an effect as to be fully covered by the common remark that they are off years." Mr. Hull also points out that presidential elections were not the cause of the contemporaneous depression in the four other industrial nations. Observations of other students of industrial conditions do not, however, coincide entirely with Mr. Hull's diagram. One reason undoubtedly is that opinions differ as to what years should be ranked as years of industrial depression. For example, Mr. Hull speaks of 1900 as a year of industrial depression, while as keen observer as James M. Swank has said, "This year was one of the most prosperous in the history of the American iron trade up to that day." An examination of Mr. Swank's reports and of reviews published in our own columns reveals some interesting facts.

The year 1896 was a period of great uncertainty owing to the free silver agitation, but that politics was not entirely responsible for the uncertainty in the business world, with limited demand and irregular prices, is shown by the fact that after the election of McKinley there was only temporary improvement and the year 1897 closed in great dullness.

As to the year 1900, it is stated in a review published in THE IRON TRADE REVIEW of Jan. 3, 1901, that, "Despite lower prices and smaller profits than those of the previous year, the result of the past 12 months is viewed with general satisfaction by the iron and steel interests of the Pittsburgh district. As 1899 was a year for record-breaking prices, the past year goes down in history as one remarkable for the meteoric fall in prices for all iron and steel products from the abnormally high altitude of the year preceding." It is true, however, that in the latter part of the year prices showed a considerable advance. The fall in prices did not interfere with the improvements which had been planned by the largest companies, especially in the Pittsburgh district.

During the next presidential year, 1904, the maintenance of prices in finished materials furnished strong testimony of the influence of associations which then existed, but there were flurries, especially in uncontrolled products, and downward movements which carried prices to new low levels for the year. A sudden change in trade conditions set in during the latter part of September and resulted in the resumption of many idle stacks and mills. What was known as "the little panic of 1903," influenced the iron trade for less than 18 months and did not cause serious trouble. Pig iron production declined only about 6 per cent as compared with that for 1903.

Following the panic of 1907, the next presidential year, 1908, was extremely unsatisfactory, and in a statement published by THE IRON TRADE REVIEW, William E. Corey, then president of the United States Steel Corporation, said, "The year 1908 will pass in the commercial history as one of the most trying in the memory of men now actively engaged in business."

The above review indicates that

while presidential years have been by no means uniformly prosperous, they do not stand out as the years of greatest disaster and depression. In some cases, as in 1904 and in 1908, the presidential years followed financial disturbances of the immediately preceding years, and quick and complete recovery could not be expected. Upon the whole, one cannot predict great prosperity for a year simply because it is a presidential year, and, upon the other hand, one cannot find in the history of presidential years ground for gloomy foreboding as to future presidential years.

Not Held Up Through Revenge

That the railroads of the country have not withheld purchasing of supplies and equipment in a spirit of revenge or hostility toward the public because higher freights have been denied to them, is declared in the annual report of the Railway Business Association, which held its annual meeting at the Waldorf-Astoria, New York, Nov. 22. The report adds:

Nevertheless, we feel that we ought not to take more than our share of loss in any general depression. If by straightforward argument we can convince the public authorities that it would be just and fair as well as wise in the public interest to moderate the current tendency to cut rate schedules down, we feel it our duty to engage actively in such discussion.

At the annual election of officers, the following were chosen: President, George A. Post; vice presidents, H. H. Westinghouse, O. H. Cutler, W. H. Marshall, A. H. Mulliken, A. M. Kittredge, W. E. Clow and George W. Simmons; Chas. A. Moore; assistant treasurer, M. S. Clayton; secretary, Frank W. Noxon.

Chester & Fleming, engineers, Pittsburgh, have been authorized by the city of Erie, Pa., to prepare plans and specifications for a steel stand pipe, 30 feet in diameter and 90 feet high, to supply the high service district of Erie.

The Lexington school board, Lexington, Ky., will shortly purchase a heating plant. It will be installed in the west end school of that city. The estimated cost is $2,500.

The furnace of the Eagle Iron Co., at Attalla, Ala., was put into blast Nov. 15.

KING IS CONFIDENT

Of an Expansion in Business.—Turn for Better in the Iron Trade.

Willis L. King, vice president of the Jones & Laughlin Steel Co., Pittsburgh, has issued a statement in which he states that the demands of 95,000,000 people and the requirements of the principal consumers, especially the railroads, strongly indicate a near at hand expansion in the steel industry and at least a fair advance in prices, although he does not predict a boom or that prices are going to advance rapidly.

The statement follows:

Judging from personal contact with representatives of commercial, industrial and transportation interests, the character of the inquiries coming to our offices, the buying of equipment and supplies by the railroads, the desire of consumers to buy for more forward deliveries and the reversal of trade sentiment since the beginning of November, I believe the turn has come in iron and steel and that there will be a gradual but steady improvement in business.

The situation has been such the past four years that there has been an under consumption of steel rather than over-production. By this I mean that, if times had been normal, the natural growth of the country would have absorbed the 33 1-3 per cent increase in capacity since 1906. I do not say that we are over our troubles, but I believe the people are growing tired of agitation and over-much legislation and are realizing that fundamental conditions in this country are sound. The volume of business throughout 1911 has been fairly large, but it has not been profitable. The decrease of idle cars on the railroads of the United States and Canada from over 207,000 on March 15, to 20,532 cars on Oct. 25, shows that equipment of the railroads is now in active use. Moreover, much of this equipment is antiquated and ready for the scrap pile. This explains the recent active buying of steel cars, which since the end of October has approximated 32,000, while THE DAILY IRON TRADE REVIEW predicts the number will be fully 100,000 cars before Dec. 31. This district naturally fares very well in the distribution of the orders and our mills have a much better rolling schedule than considered possible only a month ago. Therefore, the present 75 to 80 per cent operating capacity is certain to be increased moderately, even after allowing for seasonable quietness in certain products which will become active early in the year. We have been getting along without railroad orders and now that such buying is appearing, one can readily believe that manufacturing conditions in Pittsburgh are going to be more satisfactory throughout the winter. Under normal conditions, the railroads of the country consume about 40 per cent of the steel produced, but, in the past two years, their consumption has been nearer 15 per cent. In view of this deficiency, what will be the state of the iron and steel market if the railroads begin to buy liberally?

Lowest Prices Ever Made.

Prices of iron and steel are today lower in the United States than at any time in history, based on present costs of labor and raw material. We sold steel lower in the nineties, but then we paid $1 for common labor as against $1.65 now. Ore is now about double in cost, with a lower percentage of iron; 85 cents per ton then for coke at ovens against $1.65 at the present time and perhaps 33 1-3 per cent less traffic charges. The present level is unprofitable to the manufacturers; consumers are appreciating this fact and many are beginning to take advantage of it and, following the matter to its logical conclusion, it will require care to prevent the booking of large orders for future delivery at these prices. Manufacturers know by experience that when prices of raw and finished materials are approximately at costs of production, the turn is at hand. This, in my opinion, is the situation that faces us today. In 1909, for instance, following the open market in February, there was an advance of $8 per ton by November. While the advance did not long hold, the tonnage placed within that period was sufficient to give us a record breaking production, carrying over into 1910, whose totals for output of iron and steel gave the industry a new record.

I hardly think that the experiences of 1909 will be repeated, but do believe moderate advances will be made by reason of the rising tide of new business. I realize that politics is the one great element of uncertainty and that presidential elections have a natural tendency to create caution. Tariff revision also always means unsettled conditions. But taking everything into consideration, I can not help feeling confident of an expansion in general business and a substantial increase in iron and steel orders.

Erecting Addition

The Hyde Park Mfg. Co., Bernharts, Pa., whose incorporation was noted recently, advises that it was established in July, 1908, but just recently incorporated with $20,000 paid up capital. It is engaged in the manufacture of cotton batts, patent ball pene hammers, patent horseshoe calks and sleeves and patent ball bearings. It is erecting an additional fireproof building with basement, two stories, but is not able to advise as yet as to machinery requirements. Its officers are: President and treasurer, J. Wallace Miller; vice president, J. H. Madeira; secretary and sales manager, Charles H. Madeira; who with Abraham Schlegel and Adam Schmeck constitute the directors.

Decided Improvement in Great Britain's Trade

Increase in Pig Iron Sales—Railways Delayed Too Long in Placing Orders—Some Works Not So Busy for Three Years

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Nov. 18.

The market for raw material in Cleveland has shown the most decided improvement this week experienced for many months past. For several days in succession, slight advances have taken place, and yesterday's selling price for warrants was 47s 6d ($11.62) which is sixpence better than the price three days ago. The improvement is shared equally by pig iron and hematite. Traders are sanguine, and are looking for futher advances during the next few weeks, while consumers are much keener than sellers to operate. Plenty of forward business in on offer, and speculators have come into the market. For forward business, monthly transactions command threepence advance, with ninepence for three months. There is continued decrease in Connell stores, which now stand at 570,000 tons. There is now 7,000 tons less in stock than at the beginning of the month, while shipments are satisfactory, and are quite up to expectations. The stocks in makers' yards are gradually disappearing. Apparently, the advance is affecting all markets, Sheffield, for example, showing a decided improvement. In that district, prices of hematite have gone up fully a shilling. In the Derbyshire district, somewhat heavy stocks of pig iron existing a month ago have almost disappeared, owing to the large demand for both forge and foundry purposes. An advance in Lincolnshire prices is daily expected, the figure in that district having been rather low compared with neighboring producers. Iron founders are buying more freely, and the tone generally is healthier. In the Birmingham district, on Thursday, there was not much buying, although this was because Midland consumers have led the way in fixing up contracts, but smelters are quite unanimous in asking for more money on future business. In the hematite trade, the makers on the east coast are decidedly more cheerful, with much heavier sales. No difficulty has been realized in getting a slight advance for Cumberland iron. The market is assisted by a decided rise in the price of scrap, which has been a rather serious competitor for some time. Mixed numbers on the east coast are firm at 61s ($14.94) for prompt delivery with 62s ($15.18) for next quarter. Makers are well booked into next year. There are now 50,000 tons in the warrant stores, in addition to some little accumulation in makers' yards. In some cases, an advance of sixpence is being asked for rubio ore, the standard figure being 21s per ton.

Finished Iron and Steel.—All departments of the finished trade show a steady improvement. In the Sheffield armament department, the present activity constitutes a record. The great firms have prosperity assured for the next two years at least. Engineering sections are extremely busy, and orders are pouring in for heavy forgings and castings for ship building yards. The large works are busier than they have been for some years. Makers are now exercising some discrimination in orders, rejecting those that offer a narrow margin of profit. The bulk of the work is for the British admiralty; but there is also a big tonnage of material for Russia, Spain and Turkey. The works of Vickers, Cammell Laird and John Brown are busier than ever in their history, and without another order could continue in full activity for the next two years.

The works devoted to railway material are now operating under great pressure. The great railways, as everybody expected, postponed too long the placing of their contracts, and are now urging deliveries. The wagon works are also very well supplied with orders. For all special steels, there is an excellent demand, one of the most active departments being that producing high-class steel wire for pit ropes, and other haulage requisites. The cutlery works of Sheffield are also extremely busy.

In the iron trade, the railway preference for iron over steel has made all iron works extremely busy. The South Staffordshire works have not been so prosperous for three years. Belgian competition has ceased, and British buyers are now, after a long interval, offering premiums of as much as five shillings per ton to secure special favors. Order books are congested, and mills are running to their utmost capacity. The demand for puddled bars is becoming urgent, and some fancy prices are being realized. Unmarked bars are now quoted at £6 15s, the highest price for quite three years. Still higher prices will be realized shortly, and several mills in the Black country are being prepared for recommencement.

In the galvanized sheet trade, a slight improvement is noticeable, important firms having withdrawn recent quotations, and adopted a standard of £11 5s for future business.

The steel trade is still somewhat disorganized by the rebate scheme. The dislike of merchants and consumers is increasingly evident and, wherever possible, they are placing their business outside these arrangements.

At all the steel works in the north of England, the greatest activity continues, and selling prices remain on the following basis: Steel ship plates, £6 15s; iron ship plates, £6 10s; steel ship angles, £6 7s 6d; iron ship angles, £7; steel bars, £6 5s; iron bars, £7; galvanized sheets, £11 5s; heavy steel rails, £5 12s 6d. All less 2½ per cent, except galvanized sheets, which are less 4 per cent f. o. b., and rails, which are net f. o. b.

In the tin plate trade, there is a slight improvement this week with somewhat firmer prices. At Cardiff, makers ask 13s 6d to 13s 9d for I. C. 20 x 14 x 112 sheets.

Republic Stacks Now All Operating

The Republic Iron & Steel Co. is now operating all of its ten blast furnaces north and south, and its consumptive requirements have been such that it has absorbed 85,000 tons of steel-making iron from the open market in exchange deals for ore since July 1. At the directors' meeting the past week, the regular quarterly dividend of 1¾ per cent on preferred stock, payable Jan. 1, to holders of record Dec. 15, was declared.

The American Sheet & Tin Plate Co., Pittsburgh, is installing some new equipment in the cold roll department of its Martins Ferry, O., plant.

HISTORIC FACTS

Connected With the Manufacture of Pig Iron in Tennessee.

Some dispute having arisen as to the first man to manufacture pig iron in the state of Tennessee, Col. Samuel L. King of Bristol, Tenn., has made public some interesting historical statements surrounding the early iron industry of that territory in support of his claim that the first ore was smelted in Bristol about 1784 by his great-grandfather, James King, and William Blount, former governor of that state. The manufacture of this iron was begun by the firm of King & Blount immediately after the close of the Revolutionary War, according to his records, and it is shown that the pig product was at that time worth about $250 per ton. A dispatch from Bristol to the Knoxville *Sentinel* contains some interesting data of the early Tennessee industry, furnished upon the authority of Col. King, and in part is as follows:

Cannon balls for the war of 1812 were made at the furnace near Bristol. The ore was dug from a mine still in existence in Bristol and also from the Holston valley section, near Bristol. Thirty horses were kept busy hauling the ore, which is shown by one of Col. King's records of the burning of the barn of his great-grandfather and the loss of the animals.

William Blount was formerly United States senator from the territory of the United States south of the Ohio river, from which Tennessee was later carved. He met Nicholas Romain, of New York City, a man of big ideas, and the two conceived a plan to purchase all of the territory subsequently embraced in the Louisiana purchase. A letter written by them was lost by the messenger in a saloon in Knoxville. It fell into the hands of Andrew Jackson and he transmitted it to the United States senate. Blount was charged with a conspiracy. Upon advice of counsel, he declined to enter either a plea of guilty or not guilty, following which he was summarily expelled from the United States senate, but as a vindication he was elected governor of Tennessee when it was admitted to the union.

The people of Tennessee believed him innocent of the charge of conspiracy. It is said that the plan to get the Spanish territory, the most gigantic real estate proposition ever proposed by individuals, was to have England make a demonstration against the Spanish government in connection with the land and at the same time to incite trouble from the Americans living in the territory, in the hope that the Spanish government would sell the property for a song. Romain conducted the negotiation with the English government.

The iron furnace here was called the Barbara Iron Works, named for the wife of William Blount, who was a daughter of Edmund Pendleton, a famous pioneer character in American history.

There were two conspicuous King families in this section at the time the iron works were started. One branch of the family owned the only salt mines in the south at that time. The mines were located 50 miles above Bristol, where today hundreds of tons of salt a week are manufactured. This family was designated as the "Salt Kings." The ancestors of King were known as the "Iron Kings." They settled King's Meadows, which is now Bristol and all of which they formerly owned in fee simple.

Col. King is certain that the first iron manufactured in Tennessee came from the plant of King & Blount, which at that time was considered a very large industry. Blountville, the county seat of Sullivan county, was named for William Blount. What is now Kingsport was the center of commerce of this section, as there were no railroads.

BONDS DISCONTINUED

By Dominion Steel for Expenditures on New Plant—Stock to be Issued.

At a meeting of the directors of the Dominion Steel Corporation which was held at Montreal, Can., Nov. 20, it was decided to discontinue to provide for the expenditure on its new plant by the sale of bonds authorized in 1909, of which about $6,000,000 is still held in the treasury, but that capital should be obtained by the issue of preferred stock. A similar course was also determined upon to obtain the capital necessary for the extensions of the company which will increase its four producing collieries to 20.

Meets in Pittsburgh.—The Ohio Society of Mechanical, Electrical and Steam Engineers at a meeting at Canton, O., last week chose Pittsburgh as the place for the 1912 spring meeting, which will be held May 16 to 18, inclusive.

The board of public works of San Francisco opened bids for structural steel for the polytechnic high school, Nov. 22. Proposals were as follows: Dyer Bros., San Francisco, $71,475; Ralston Iron Works, San Francisco, $81,268, and Pacific Rolling Mills, San Francisco, $82,720.

A strike of coremakers at the plant of the Aluminum Castings Co., Detroit, has been settled. The steel work on additions to its plant has been awarded to the Russel Wheel & Foundry Co.

TOWING LOCOMOTIVES

For Isthmian Canal—Result of Opening of Bids at Washington.

Bids were received on Nov. 20 by Maj. F. S. Boggs, general purchasing officer of the Isthmian canal commission, Washington, for furnishing under circular 650, electric towing locomotives for the canal locks. The bids, as called for, were for the material and parts necessary to complete one locomotive, and also 39 similar locomotives and spare parts for same. It was the intention of the commission to purchase one locomotive at once and to purchase the remainder after the first had been satisfactorily tested. The bids were as follows, under classes and with deliveries as indicated:

Class 1, item 1, one locomotive for trial, Gatun locks; item 2, 39 locomotives; item 3, spare parts.

Alternate "A", Class 1, same as Class 1, except that wherever vanadium steel is specified, cast steel shall be used.

Deliveries: (a) class 1, item 1, (b) item 2, four locomotives each, Gatun, Pedro Miguel and Miraflores locks, 12 in all; (c) 11 locomotives each for Gatun and Miraflores, four for Pedro Miguel, 27 in all. Spare parts are to be delivered complete 30 days before completion of the contract.

Atlas Car & Mfg. Co., Cleveland, O.—Class 1, $831,542.18; (1) $38,500; (2) $764,400; (3) $28,642.18; "A", $827,395.93; (1) $38,400; (2) $760,500; (3) $28,495.93, on Westinghouse motors.

Alternate bid on General Electric motors: Class 1, $821,476.98; (1) $31,000; (2) $761,670; (3) $28,706.98; "A", $808,960.73; (1) $31,000; (2) $756,600; (3) $21,360.73; deliveries, (a) 180-200 days; (b) 135 to 260 days; (c) 260 to 470 days.

On the General Electric proposition, 46 days longer.

McMyler-Interstate Co., Cleveland, O.:—Class 1, $650,068.30; (1) $26,175; (2) $602,550; (3) $21,343.30; "A", $643,484.30; (1) $26,000; (2) $596,700; (3) $20,784.30. Deliveries: (a) 185 days; (b) 185 to 205 days; (c) 235 to 325 days.

Alternative on General Electric equipment: Class 1, $638,412.80; (1) $20,400; (2) $598,650; (3) $19,362.80; "A", $630,971.81; (1) $20,200; (2) $590,850; (3) $19,921.80. Deliveries: (a) 255 days; (b) 210 to 230; (c) 260 to 350 days.

Fawcus Machine Co., Pittsburgh:—on Westinghouse equipment: Class 1, $530,213; (1) $22,145; (2) $492,017; (3) $16,051. "A", $521,621.76; (1) $21,943; (2) $484,121; (3) $15,557.76. Deliveries, (a) 210 days; (b) 90 to 167 days; (c) 188 to 356 days.

On General Electric equipment: Class 1, $508,046; (1) $18,613; (2) $473,382; (3) $16,051; "A", $499,472.76; (1) $18,411; (2) $465,504; (3) $15,557.76. Deliveries: (a) 220 days; (b) 90 to 200 days; (c) 230 to 470 days.

General Electric Co., Schenectady, N. Y.—Class 1, $510,472.60; (1) $25,278; (2) $468,000; (3) $17,194.60. "A", $498,016.35; (1) $24,976; (2) $456,300; (3) $16,740.35; on body sections of its own manufacture. Deliveries, (a) 260 to 290 days; (b) 210 to 270 days; (c) 280 to 480 days.

Alternative propositions: One locomotive and 40 locomotives: One, $25,292; 40, $501,638; one, $25,161; 40, $493,746; one, $25,313; 40, $501,230; one, $25,011; 40, $480,375; one, $26,580; 40, $568,440; one, $26,278; 40, $556,446; one, $26,594; 40, $576,808; one, $26,615; 40, $576,400. The last four bids are on Lidgerwood Mfg. Co.'s patented slip-friction windlass body sections.

Westinghouse Electric & Mfg. Co., Pittsburgh:—On body sections of Baldwin Mfg. Co. and Brown Hoisting Machinery Co.: Class 1, $575,121.75; (1) $27,702; (2) $532,430; (3) $17,989.75; "A", $564,334.50; (1) $24,448; (2) $522,524; (3) $17,362.50. On Westinghouse body sections: Class 1, $579,399.75; (1) $24,189; (2) $36,850; $579,399.75. On Lidgerwood body sections:—Class 1, $717,942.75; (1) $28,493; (2) $666,981; (3) $22,468.75. Deliveries:—(a) 140 days; (b) 132 to 209 days; (c) 216 to 398 days.

CAMBRIA PLANTS

Inspected by Members of Engineers' Society of Western Pennsylvania.

About 200 members of the Engineers' Society of Western Pennsylvania, on Saturday, Nov. 25, inspected the plants of the Cambria Steel Co., Johnstown, Pa. The party left Pittsburgh at 7:55 a. m. on a special train over the Pennsylvania railroad, arriving at Laurel avenue, Johnstown, two hours later. President Charles S. Price and several other officials of the Cambria Steel Co. met the party and escorted the visitors through the rod mill, wire drawing, galvanizing, fence and nail shops, which were completed early this year. The party was then taken aboard a special train of the Cambria Steel Co. and a short ride over the Interworks railroad, which connects the various plants of the company, landed the party at the Cambria works. Following an inspection of the air compressor house, blowing engine house, machine shop and the 18-inch continuous mill, completed in 1910, luncheon was served. President Price delivered a brief address, in which he outlined briefly the engineering work in connection with the building of reservoirs and the laying of new pipe lines to obtain a better water supply.

During the afternoon the visitors inspected the 13-inch mill, 10-inch and 14-inch shipping beds, 24-inch universal plate mill, disc shop, rake shop, Gautier 8-inch No. 3 and 12-inch No. 2 mills, which turn out chiefly agricultural implement parts and present many features of mechanical interest; ore unloading apparatus, blast furnaces, open-hearth furnaces, blooming mill, 34-inch slabbing mill, 134-inch plate mill, bolt shop, car forge shop, car shop, structural shop and yards.

The works of the Cambria Steel Co. cover 392 acres of land and extend along the river a distance of 6½ miles, giving employment to 18,000 men.

The party returned to Pittsburgh shortly after 6 p. m.

Southern Iron Makers Seek Lower Freights

Southern pig iron makers have joined in the movement for lower freight rates which has lately become common in the iron and steel industry in different sections of the country. These interests are asking for a reduction of about $1 a ton on the hauls to northern markets to enable them to compete with the more local irons. It is claimed that the $6.40 all-rail rate to New England, $5.95 all-rail to New York, $5 all-rail to Philadelphia, $4.35 all-rail to Cleveland and Chicago, $3.75 all-rail to St. Louis, $3.25 all-rail to Cincinnati and similar charges to other centers have had the effect of gradually eliminating southern iron from the mixtures of northern producers. It is declared by the southern makers that once they have lost ground in the northern markets, it is very hard for them to recover it. A recent meeting of southern producers was held at Birmingham, and a large number of the leading southern pig iron manufacturers were in attendance.

FOUNDRY FOREMEN

Have a Varied Program—Numerous Prizes Awarded.

Over 300 members, ladies and guests attended the annual ladies' night of the Chicago Foundry Foremen's Association, which was celebrated at Lewis Institute, Friday evening, Nov. 24. The program opened with a welcome by Director George N. Carman, with a response by President Eugene W. Smith.

William E. Mason, of Chicago, former United States senator, entertained the meeting for an hour with an address on citizenship, followed by lantern slides of the Grand Canyon and Yellowstone Park, with an account of the senator's personal experiences as a tourist.

The invitation had announced six prizes to be awarded to members, ladies and guests, but the number had grown to 36 when this portion of the program had been reached. The newest C. F. F. A. baby received $5 in gold, the newest bride and the lady who had been longest a wife $2.50 glove orders.

Secretary Hoyt and other officers were barred from a contest for the most popular member. The awards in guessing contests varied all the way from books by Dr. Moldenke to $10 in gold. The Henry E. Pridmore contest tempted the ladies to guess the weight of a casting for two prizes of cut glass pieces. The Carborundum Co. had four prizes for the ladies and four for the mere men. Other prizes were offered by the Garden City Sand Co., International Molding Machine Co., Rogers, Brown & Co., Pickands, Brown & Co., Tennessee Coal, Iron & Railroad Co., *The Foundry*, *Castings*, *Metal Industry* and the *Iron Age*.

REPORT MADE

By Harbison-Walker Co. for Year Ending Sept. 30.

The ninth annual report of the Harbison-Walker Refractories Co., Pittsburgh, for the year ending Sept. 30 last, shows earnings, after deducting $281,103, which covers depreciation of plants, of $1,686,334, and net profits for the year of $1,443,200, while the net surplus for the year, after charging interest on bonds and dividends on the preferred and common stocks, amounted to $430,200.

President H. W. Croft, in a statement to stockholders, states that "the officials and board of directors feel that the showing made is satisfactory, considering the condition of business throughout the country during this period." The annual meeting of stockholders will be held Jan. 15.

The balance sheet as of Sept. 30, follows:

ASSETS.

Property account	$28,635,163.24
Betterments, completed	1,284,222.72
Betterments, uncompleted	400,642.17
Deferred charges	295,877.41
Current assets:—	
Inventories	$1,699,778.18
Accounts receivable	1,257,209.74
Bills receivable	20,412.34
Cash	689,073.73
Investment securities	252,000.00
Other securities	328,424.91
Total assets	$34,862,804.44

LIABILITIES.

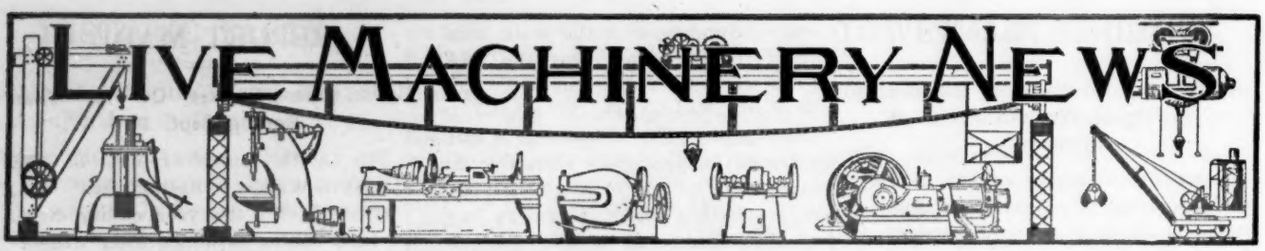
Capital stock	$27,600,000.00
Bonds	1,265,000.00
Reserves	560,260.59
Accounts payable	222,483.33
Surplus	5,215,060.52
Total liabilities	$34,862,804.44

Ruling on Loose Steel Sheets

The interstate commerce commission has announced that the joint second class of $1 per 100 pounds for transportation of less than carload quantities of loose steel sheets, less than 1-16 of an inch in thickness, from Brackenridge, Pa., to Chattanooga, Tenn., is unreasonable so far as it exceeds the fourth-class rate of 65 cents. This announcement was made in the case of the Southern Queen Range Co. against the Cincinnati, New Orleans & Texas Pacific and other railroads.

E. D. Thompson, secretary of Theo. Geissmann & Co., will sever his connection with that firm, Dec. 31, to become associated with the Deforest Sheet & Tin Plate Co., Niles, O.

The general contract has been let by the Quinn Mfg. Co., Kalamazoo, Mich., for its new factory at Division street and the Grand Trunk railway, Detroit.



A slight falling off in sales characterized the New York machinery market last week. No new lists were submitted to the trade and no action was taken on existing lists. Transportation companies with offices in New York report a large volume of machinery exports; machine tools and hoisting apparatus predominate in the shipments to European ports, while much sugar plantation and mining machinery is consigned to South America and Mexico. In Pittsburgh, the condition of the market is "spotty," some concerns reporting no change while others have been favored with more general inquiry for machinery and tools. In Cleveland, an order has recently been placed for a large ore handling plant to be installed at a Canadian steel plant. Another Cleveland concern has figured on a coal handling plant to be erected for a Canadian railroad but this contract has not yet been closed. The Cleveland market for general machinery lines, however, is featureless. In Chicago, several attractive orders for machine tools have been placed by manufacturing concerns lately. The Illinois Central list has not yet been acted on. In Kentucky, much interest is reported in mining equipment.

Power Plant Equipment

J. T. Day, Hazel Green, Ky., is in the market for electrical equipment to be installed in a plant of moderate capacity.

The council at Mazeppa, Minn., is considering the installation of a steam or gasoline engine for auxiliary service at the local electric light plant.

The Iron Mountain mine, near Wallace, Id., is planning to install an electric power plant at a cost of $100,000.

The city clerk, Geneva, Ill., will soon advertise for bids for engine, generator, boiler, etc., to be installed in the local electric lighting plant. The approximate cost is $18,000.

The Newark board of education has received bids for power transmission machinery for the East Side commercial and manual training high school, Newark, N. J.

The street lighting committee of the city council, Milwaukee, has decided to purchase the equipment for a municipal electric lighting plant before commencing the erection of the building.

The county commissioners, Winnemucca, Nev., have engaged Burns & McDonnell, engineers, Kansas City, to prepare estimates on the installation of an electric lighting and water system at the former place.

The Kokomo Public Utility Co., Kokomo, Ind., has ordered one 1,200-kilowatt, one 50-horsepower and one 35-horsepower steam turbines from the Westinghouse Machine Co., East Pittsburgh, Pa.

The Berkshire Street Railway Co., Pittsfield, Mass., has placed an order with the Westinghouse Machine Co., East Pittsburgh, Pa., for two 750-kilowatt, low pressure, steam turbines which drive three-phase, 25-cycle, 375-volt, alternating current generators.

The water commission of Two Rivers, Wis., has voted to engage engineers to investigate the proposition of increasing the capacity of the power plant at the municipal pumping station.

W. T. Clement, mayor, Enfield, N. C., will receive bids until Dec. 6 for the construction of a steam plant to cost $10,000. C. E. Fairbanks, American Bank building, Richmond, Va., is the engineer.

The Mesaba Range Power Co., Duluth, Minn., will install a power plant to furnish current to the Mesabi range towns and mines. C. E. McMillan, the engineer, has just made a preliminary report.

M. J. Anderson, Grant Pass, Ore., is interested in a company which plans to erect a hydro-electric power plant on the south fork of the Coquille river. The cost is estimated at $1,000,000; 25,000 horsepower will be developed.

J. J. C. Bowyer, town clerk, Corydon, Ia., will receive bids until Dec. 5 for the construction of an electric lighting plant, including boilers, generator, engines, etc. The Iowa Engineering Co., Clinton, Ia., is the engineer.

The Chippewa River Power Co., Mt. Pleasant, Mich., has purchased the plant of the Harris Electric Co., that city. The former concern has been authorized to issue $2,000,000 worth of bonds, this sum to be expended for equipment.

The Appalachian Power Co., Atlanta, Ga., Louis B. Magid, Atlanta, president, is changing its name to the Appalachian Electric Power Co. The company has engineers looking over five properties in north Georgia with a view to making power developments.

The Appalachian Power & Light Co., Richmond, Va., is buying equipment in the New York market. The company was incorporated several months ago to develop electric power along the James and New rivers, in Virginia.

The Roy Patton Lumber Co., Jackson, Ky., will shortly be in the market for additional power and woodworking machinery. The concern intends to add a department for the manufacture of automobile bodies and spokes.

Alexander Bros., Cadiz, Ky., have purchased a lighting franchise from the municipality, and will begin the construction of a plant within 90 days. It will be operated by the same power plant now used for their ice factory.

The Standard Portland Cement Co., Charlestown, S. C., will spend $500,000 in doubling the capacity of its plant at Leeds, Ala. A total output of 2,400 barrels a day will be provided for, and steam turbine power will be developed.

The Jellico Electric Light, Heating & Power Co., Jellico, Tenn., is making a number of improvements in its plant. One 200-horsepower boiler has already been installed, and it is intended to purchase another of the same capacity a little later on.

The Federal Power & Water Co., Tucson, Ariz., has filed notice with the county recorder of the appropriation of 10,000 cubic feet of water in the Sabine canyon, and 5,000 cubic feet in the Bear canyon. A hydro-electric plant will be constructed at the junction of the two canyons. H. W. Roche, Tucson, is president.

New Construction

The Dominion Axle & Forge Works, Guelph, Ont., has begun the construction of its factory.

S. L. Williams & Sons, Greenville, Tenn., will erect a foundry and machine shop at that place.

The Tower Grove Foundry Co., St. Louis, will erect an addition at an estimated cost of $15,000.

The Farrell Foundry & Machine Co., Ansonia, Conn., has awarded contracts for the construction of a new office building.

George Bros., proprietors of the Enterprise Stove Co., Bristol, Va.-Tenn., contemplate the establishment of a stove foundry at Asheville, N. C.

The Central Foundry Co., Oklahoma City., Okla., will erect an addition to its plant, 70 x 150 feet, to cost $15,000.

F. J. Milam, Clinton, S. C., contemplates the establishment of a machine shop, to manufacture automobile parts, etc., at Greenwood, S. C.

The Duquesne Steel Foundry, Coraopolis, Pa., has awarded a contract to W. T. Powell, Pittsburgh, for a factory addition, 52 x 82 feet.

S. L. Williams & Sons are purchasing equipment for installation in a foundry and machine shop which they are establishing at Greeneville, Tenn.

Bids are being taken by the American Can Co. for a two-story brick and concrete factory building to be erected at New Castle, Pa., at a cost of $30,000.

Permits have been received by the Cadillac Motor Car Co., Detroit, for the erection of a brick warehouse on Burroughs street, to cost $12,000, and a boiler house, to cost $10,000.

Plans are being prepared by the Pittsburgh Armature Works for a two-story steel and concrete building to be erected on property recently purchased at West End, Pittsburgh.

Bids are being taken by the Pennsylvania Tank Car Co. for buildings and equipment for a new plant to be erected at Sharon, Pa., adjoining the plant of the Petroleum Iron Works.

It is reported that the New York, New Haven & Hartford Railroad Co. will build a machine shop estimated to cost $50,000 at New Haven, Conn. G. W. Welden, New Haven, is machinery superintendent.

Bids are being taken for the Union Paper Mill Co., for equipment for the new plant to be built at Monongahela, Pa. The contract for the building has been awarded to Frank Underwood, of Monongahela.

Plans are being prepared by the Wheeling Metal & Mfg. Co., Wheeling, W. Va., for an addition to its plant for the manufacture of skylights and metal cornice work. Some new machinery will be required.

The American Radiator Co., Chicago, is perfecting plans for establishing a plant at Bayonne, N. J. The work will be under the direction of the company's engineering department in Chicago.

The large addition to the Hyatt Roller Bearing Co.'s plant at Middlesex street, Harrison, N. J., is nearing completion. The building will be ready for machinery installation about Jan. 1.

Plans have been filed at the Newark, N. J., building department, for a brick factory which will be erected at 113-115 Lafayette street. The estimated cost is $16,050 and M. B. Gould is owner.

P. C. Hunter, architect, 191 Ninth avenue, New York, has prepared plans for a wagon factory, which will be erected at Twenty-second street. The building will be 99 x 100 feet and four stories. The estimated cost is $60,000, and F. E. Moore is owner.

The Rybolt Heating Co., Indianapolis, advises that it has under construction a building, 38 x 97 feet, three stories and basement, which will be used for manufacturing purposes. The concern makes furnaces and laundry dryers.

The Valley Gray Iron Foundry Co., Saginaw, Mich., advises that it has had plans prepared for a two-story, brick structure, 33 x 90 feet, to be erected at Bristol and Water streets, that city. The new building will be used for offices and pattern storage.

A contract has been awarded by the Hupp Motor Co., Detroit, for the erection of a plant at Windsor, Ont. The same concern has taken out permits for the erection of a two-story, brick factory at Mt. Elliott and Milwaukee avenues, Detroit, to cost $65,000.

J. H. Williams & Co., 150 Hamilton avenue, Brooklyn, N. Y., manufacturer of drop forgings, recently purchased 60 acres near Buffalo, and will remove their plant to that section. Plans are now under way for the erection of a $1,000,000 plant on the property.

The Termaat & Monahan Co., Oshkosh, Wis., manufacturing gas and gasoline engines, etc., has broken ground for a new foundry building, to be L-shaped, each wing being 50 x 125 feet. The present foundry will be remodeled for machine shop purposes.

The Myers Loading Machine Co., which was incorporated recently, has prepared plans for a plant to be erected at Ridgway, Pa., for the manufacture of machines for mining and loading coal. The company is capitalized at $100,000. John K. Kerr, of Buffalo, is vice president of the company.

The Joliet Bridge & Iron Co., Joliet, Ill., advises that it has not yet arrived at any definite plans as to its proposed new buildings. The company is in the market for the following machines which it has not yet purchased:

One double head, 1-inch capacity, thread cutting machine.
One four-spindle, 1½-inch, nut tapper, belt driven.
One 2½-inch, single head, screw cutting machine, with power feed and lead screw.

The Burnet Leather Co., 27 Spruce street, New York, has plans under way for the construction of extensive additions to its plant at Little Falls, N. Y. The improvements consist of a six-story concrete factory building, 62 x 63 feet, and a one-story power house 50 x 100 feet. The Turner Construction Co., 11 Broadway, has the general contract, which includes machinery equipment.

The Lavigne Gear Co., Detroit, advises that it has installed machinery and is making use of about 12,000 square feet of floor space at the Wisconsin Engine Co.'s plant at Corliss, Wis. The company expects to erect a plant of its own, either at Detroit or Milwaukee, within the coming year. The proposed plant will contain from 30,000 to 60,000 square feet of floor space. The concern manufactures automobile steering gears.

Miscellaneous

The Louisville & Nashville railroad is planning considerable improvements in its shops at Howell, Ind., it is reported.

The Dryden Timber & Power Co., of Dryden, Ont., is letting contracts for pulp mill machinery and equipment amounting to upwards of $200,000.

The Janesville Electric Co., Janesville, Wis., has contracted with Allis-Chalmers Co., Milwaukee, for one 500-kilowatt turbine generator, with conductor and switchboard.

The Robert Gilchrist Co., 332 Third street, Elizabeth, N. J., has leased a large metal shed formerly used as a warehouse by the Central Railroad of New Jersey.

A contract has been awarded to the Harris Pump & Supply Co., Pittsburgh, for equipping a new high service pumping station for the Ohio Valley Water Co., at Bellevue, Pa.

The Cumberland Marble Co., Mead-

ow, Tenn., is in the market for a traveling crane, a derrick, gang saws and other equipment for a cut-stone plant.

The Janesville Electric Co., Janesville, Wis., has awarded a contract to Allis-Chalmers Co., Milwaukee, for one 500-kilowatt turbine generator and accessories.

The director of public service, Cleveland, will receive bids until Dec. 7 for air compressor equipment for installation at the Kirtland pumping station, that city.

Bennington, Okla., is preparing to purchase equipment for its water system. Pumping equipment, pipe, etc., will be purchased. Bids close Dec. 15. Nagel & Peterson, Muskogee, Okla., are the engineers.

The plant of the Ashland Leather Co., Ashland, Ky., will be rebuilt in the immediate future, according to an announcement of T. J. Shaut, president of the company. Its plant was recently badly damaged by fire.

The Green Bay Foundry & Machine Works, South Broadway, Green Bay, Wis., has installed a new lathe with 20-foot centers and a 52-foot swing. Other equipment recently added includes a large press.

The contract for the two-story power plant to be erected near Parkersburg, W. Va., by the United States government has been awarded to the Bayard Construction Co., Philadelphia.

The Pittsburgh Crucible Steel Co., Pittsburgh, has awarded a contract to the Babcock & Wilcox Co. for 8,000-horsepower horizontal water tube boilers for installation at the new open-hearth plant, Midland, Pa.

The Southern railway, with general offices in Washington, D. C., is planning to install a 10-ton crane for use in handling freight at Chattanooga, Tenn., where it is making a number of important improvements.

The Patterson Foundry & Construction Co., East Liverpool, O., has received a contract for all machinery and kilns for the new plant to be erected by the Paden City Pottery Co., Paden City, W. Va.

The Brownell Co., Dayton, O., has been given the contract for the new power equipment of the Henderson Browning Co., Henderson, Ky. Three boilers, with a total of 600 horsepower, will be installed.

Hoyt Brothers and Charles C. Moore & Co., of San Francisco, have been awarded the contract for the construction of the Southern Sierras Power Co.'s new 15,000-horsepower plant at San Bernardino, Cal.

The Ohio Valley Water Co., Bellevue, Pa., has awarded a contract to the Harris Pump Co., Pittsburgh, for the installation of a 200-gallon per minute pump to be operated by a 25-horsepower gas engine.

H. H. Hossman, contracting engineer, Portsmouth, O., has received the contract for all the iron and steel work for a new blast furnace for the Star Furnace Co., Jackson, O., which will practically build a new plant.

The Nordberg Mfg. Co., Milwaukee, has the contract for furnishing a 500-horsepower Nordberg, tandem, compound, condensing engine in the plant of the Antigo Electric Co., Antigo, Wis.

The Falls City Construction Co., Louisville, Ky., which has the contract for the construction of the county courthouse and jail at Jonesboro, La., will take bids shortly on a heating plant for the building.

The Louisville Gas Co., Louisville, which is consolidating its power plants at Jackson and Washington streets, that city, will let contracts this week for conveying and coal handling machinery.

The Pennsylvania Casting & Machine Co. is making some improvements to its power plant on the Northside, Pittsburgh, which will include the installation of a Jones underfeed stoker to operate a 150-horsepower boiler.

The McClintic-Marshall Construction Co., Pittsburgh, has placed a repeat order with the Van Dorn Electric Co., Cleveland, for a number of portable drilling and reaming machines to be used in the fabrication of structural steel work for the Panama canal.

The Kerr Turbine Co., Wellsville, N. Y., advises that over 700 of its machines, aggregating more than 50,000 horsepower, are in active service and that more unfilled orders are now booked than at any previous time in the history of the company.

The Louisville & Nashville railroad has amended its articles of incorporation whereby it will be able to construct, own and operate telephone and telegraph systems. It is expected that the road will be a heavy buyer of electrical equipment for this purpose from now on.

The Southern Mining Co., Williamsburg, Ky., has taken over the holdings of the Asher Coal Mining Co., Wasioto, Ky., and will spend $500,000 in developing the property. A lot of new machinery will be purchased and 18,000 acres of land will be controlled. Some improvements will also be made in the Asher coal-handling plant in Louisville.

Government News

Bids were opened by the isthmian canal commission Nov. 22, under circular 622, for the purchases, delivered at the isthmus, as follows:

Class 1, item 1, 14 locomotive cranes, 15-ton:

American Hoist & Derrick Co., St. Paul, $49,700, 2 in 84 days, etc.; or $33,916, 1 in 6 weeks and 1 each week thereafter.

Brown Hoisting Machinery Co., Cleveland, $48,400, 2 March 15, etc.; or $8,860 each, 2 Feb. 15, etc.

Browning Engineering Co., Cleveland, $34,000, 1 in 60 days, etc.; or $7,789 each, 1 in 30 days, etc.

Industrial Iron Works, Bay City, Mich., $30,400, 2 in 50 days, 2 in 90 days.

McMyler Interstate Co., Bedford, O., $39,400, 2 in 135 days; or $32,440, 2 in 70 days.

Ohio Locomotive Crane Co., Bucyrus, O., $27,140, 20 to 70 days.

Orton & Steinbrenner Co., Chicago, $27,984, 2 in 70 days, 2 in 90 days; or $26,352, 2 in 60 days, 2 in 80 days.

Class 1, item 2, one to six auxiliary hooks and lines: American Hoist & Derrick Co., $390; Brown Hoisting Machinery Co., $400; Browning Engineering Co., $350 if with crane, $450 without; Industrial Iron Works, $275; McMyler Interstate Co., $275 (under alternate bid $100); Orton & Steinbrenner Co., $110 to $225.

Class 2, item 1, four 11-ton stiff-leg derricks: American Hoist & Derrick Co., $22,057.84, two in six days and two in 12 days; McMyler Interstate Co., $12,296, two in 75 days and two in 95 days; Modern Steel Structural Co., $14,200, all in 40 to 55 days; Lidgerwood Mfg. Co., $11,988, two in 50 days and two in 60 days.

Class 2, item 2, four hoisting engines for derrick: American Hoist & Derrick Co., $6,195.28, 6 to 42 days; electrical equipment, $6,582.12, 13 weeks and 15 weeks; Lenher Engineering Co., $7,800, 40 and 80 days; electrical equipment, $10,400, 100 and 110 days; Williamson Bros. Co., $5,180, 45 and 90 days; Lidgerwood Mfg. Co., $13,340, 30 and 60 days; steam equipment, $3,140, $2,674 and $2,333; electrical equipment, $5,110, $2,893, $5,322 and $3,430.

American Hoist & Derrick Co., items 1 and 2 combined, steam equipment, $22,493.20; electrical equipment, $22,880.04; two in 13 weeks and two in 15 weeks.

The bureau of supplies and accounts, navy department, has awarded contracts for furnishing materials and supplies, delivered at the naval stations named, under bids opened on the dates mentioned, in accordance with the schedules enumerated, as follows:

Opening Oct. 3.

Schedule 3931, class 75, Key West, 1 large bevel band saw, American Woodworking Machinery Co., Rochester, N. Y., $551.

Opening Oct. 17.

Schedule 3951, class 118, Brooklyn, and Newport News, 20 lower hoist controllers, Cutler Hammer Mfg. Co., Milwaukee, $9,790.

Opening Oct. 24.

Schedule 3969, class 23, Brooklyn, 2 hoisting equipments for boat cranes, 166 horsepower, 120 volt motors, and 25 3-horsepower motors for ammunition hoists, Newport News Ship Building & Dry Dock Co., $18,040.

Schedule 3982, class 41, Iona Island, N. Y., 1 lathe, Fairbanks Co., Washington, $719.

Schedule 3983, class 51, Brooklyn, 4 ash-hoisting engines, Newport News Ship Building & Dry Dock Co., $1,420.

Opening Oct. 31.

Schedule 4003, class 102, Washington, 3 drill presses, 4-spindle, Kemp Machinery Co., Baltimore, $708.75.

Bids will be opened on Dec. 19 by the bureau of supplies and accounts, navy department, for furnishing and delivering at the Brooklyn navy yard, eight trolley hoists, under schedule 4132.

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The following manufacturing companies have filed articles of incorporation:

The Ideal Generator Co., Madera, Cal.; $500,000; to manufacture boilers; by G. A. and J. C. Krohn, and A. B. McGilvray, all of Raymond, Cal.

The Curtis Jack & Truck Co., St. Louis; $75,000; to do a manufacturing business; by J. R. Curtis, H. C. Flunker, A. W. Smith, O. Stifel, Geo. E. Booth.

The Basler Machine Co., Kittery, Me.; $10,000; to manufacture shoe and leather machinery; by president, Horace Mitchell; treasurer, C. E. Smothers.

The Allens Nut Lock Co., New Orleans; $300,000; by president, Ogelsby Allen Jr.; vice president, Joseph G. Allen; secretary and treasurer, Francis Allen.

The Hughes Nut Lock Corporation, Lynchburg, Va.; $25,000; by president, R. D. Hughes; vice president, Charles P. Patterson; secretary and treasurer, A. T. Henderson.

The Reinhardt Stove & Furnace Co., New Athens, Ill.; $10,000; to manufacture furnaces, stoves, sheet-iron work, etc.; by G. S. Reinhardt, Henry Deichman, Peter Haupt.

The Meteor Automobile Co., Mt. Vernon, N. Y.; $50,000; to manufacture motors, engines, etc.; by Frank A. Kateley, 11 Wallace avenue; Albert F. Goscheldt, 154 Cottage avenue, Mt. Vernon, etc.

The Eagle Aerial Mfg. Co., St. Louis; $100,000; to manufacture aeroplanes; by president, Thomas H. Keppel; vice president, Robert F. Keppel, both of Indianapolis; treasurer, Joseph Van Realte, St. Louis.

The Czar Ignition Co., Buffalo; $12,000; to manufacture ignition apparatus for gasoline engines, etc.; by Henry V. Bisgood Jr., William F. White, Robert A. Huessler, Buffalo, N. Y.

The Gealy Wrench & Mfg. Co., Grove City, Pa.; $50,000; by treasurer, Ira C. Black, Grove City, Pa.; directors, G. M. Gealy, L. C. Black, U. S. Cope, A. S. White, all of Grove City, Pa.

The Thomas P. Skelly Bolt Co., Philadelphia; $15,000; by treasurer, James Finnesey, 849 North Twenty-fourth street, Philadelphia; directors, James Finnesey, Lewis W. Kobler, John Neville, all of Philadelphia.

The Connecticut Metal & Chemical Co., New Britain, Conn.; $50,000; to engage in melting and refining business, manufacturing, etc.; by E. A. Moore, W. S. Rowland and Judge J. E. Cooper.

The Verona Steel Castings Co., Pittsburgh; $10,000; by treasurer, Wm. Bierman, 4747 Friendship avenue, Pittsburgh; directors, J. M. Hansen, Wm. Bierman, Pittsburgh; C. E. Jones, Oakmont, Pa.

The A. V. Mfg. Co., Manhattan, New York City; $200,000; to manufacture machinery, tools, etc.; by Allesandro Bolognesi, Aldo Bolognesi, 52 Wall street; William H. Hoppin Jr., 59 Wall street, New York City.

The Griffith Mfg. & Supply Co., Griffith, Lake county, Ind.; $20,000; to manufacture metal castings; by H. B. Potter, I. W. Hough, P. J. Bettinger, W. J. McFarland, Joseph Grimmel, Roy Pearson and Alexander Jamison.

The Volkmar Auto Starter Co., Manhattan, New York City; $20,000; to manufacture starting devices for automobiles, etc.; by Bernhard Volkmar, 725 Eagle avenue; Edward Giegerich and Wm. H. Giegerich, 1218 Tinton avenue, Bronx.

The Bedford-Bergen Auto Exchange, Brooklyn, N. Y.; $25,000; to manufacture machinery; by Ralph Brown, 215 Atlantic avenue, and Max Keve, 914 Putnam avenue, Brooklyn; Charles Goldstein, 18 East 106th street, New York City.

The Diamond Machine Co., Bellevue, Pa.; $50,000; by treasurer, W. R. Murphy, Bellevue, Pa.; directors, Wm. F. McCullough, F. P. Glasser, Pittsburgh; B. P. Tracy, Sewickley, Pa.; Geo. Gunn, W. R. Murphy, Bellevue, Pa.

The American Tire Filler Co., Washington, Pa.; $200,000; to manufacture automobiles and bicycles, manufacture and deal in fillers for automobile and other tires, etc.; by James S. Forsythe, F. C. Lewis, H. J. Johns, R. D. Forsythe, of Washington, Pa.; and E. W. Rolfe, of Pittsburgh.

The Twentieth Century Gold Extracting Co., Manhattan, New York City; $100,000; to manufacture machines for extracting gold from sand, etc.; by Albert H. Gross, 1 East Ninety-second street; Edward H. Jewell, 40 Exchange place; Henry C. Wade, 50 West Seventy-seventh street, New York City.

The Hershberger Removable Calk Horseshoe Co., Dorranceton, Pa.; $25,000; by treasurer, A. S. Hershberger, 638 Wyoming avenue, Dorranceton, Pa.; directors, W. C. Garrison, Berwick Pa.; Dr. H. A. Paget, Scranton, Pa.; A. S. Hershberger, Dorranceton, Pa.; Geo. N. McAlarney, L. T. Holdsworth, Wm. Gabriel, Joseph Thomas, J. H. Hershberger, Dr. F. A. Wiltrut, all of Wilkes-Barre, Pa.

General Industrial

The Novelty Machine Co., Chicago, has dissolved.

The Wahl Adding Machine Co., Chicago, has changed its name to the Typewriter Machine Co.

Woods Bros., Chatham, Ont., have started a small gray iron jobbing foundry. James and Charles Woods are interested.

The Lebanon Valley Iron & Steel Co., Lebanon, Pa., has increased its capital stock from $1,500,000 to $2,000,000.

The Western Canada Foundry Co. has been incorporated and will establish a foundry at Yorkton, Sask. W. J. Duncan, F. S. Collacot and G. H. Bradbrook are the incorporators.

The Kelsey Wheel Co., Detroit, has awarded contracts for an addition to its factory, the steel work going to the Whitehead & Kales Iron Works Co.

The directors of the Seneca Chain Co., with works at Kent, Mansfield and Zanesville, O., have voted to re-

duce the common stock from $294,300 to $147,150.

The Low Moor Iron Co. of Virginia, Low Moor, Va., advises that it is rebuilding its shops, and states that it will not have to go to any outside source for material.

The Michigan Steel Castings Co., Detroit, which is erecting an additional foundry building, has let the steel contract to the Wisconsin Bridge & Iron Co.

The Firth-Sterling Steel Co., McKeesport, Pa., advises that its recent fire was of no consequence, and that the operation of the plant has not been delayed in any way.

The Henry Vogt Machine Co., Louisville, Ky., advises that its foundry, which was damaged by fire recently noted, is almost under roof again, and will be in operation next week.

The Havers Motor Car Co., Port Huron, Mich., has increased its capital stock from $60,000 to $200,000 and will double the output of cars originally placed for this season.

The Lunkenheimer Co., manufacturer of brass goods, has listed $1,000,000 6 per cent preferred stock on the Cincinnati stock exchange. The first quotations on the new stock are $110 a share bid and $115 asked.

The plant of the Detroit Gear & Machine Co., Detroit, narrowly escaped destruction, Nov. 22, in the fire which caused a $75,000 loss in the Grand Trunk train sheds. The gear company's loss was trifling.

J. H. Williams & Co., of Brooklyn, it is announced, will remove their drop forging works to Buffalo, having purchased a site of 61 acres. It will proceed at once to build its Buffalo plant.

The Michigan Auto - Joint Co., Grand Rapids, which was recently incorporated, advises that it plans to begin manufacturing within a month, expecting to put out 300 to 500 joints per week.

Several hundred boilermakers and helpers at the Schenectady, N. Y., works of the American Locomotive Co., returned to work on Nov. 23, after being out on strike for nearly a month.

The Trust Co. of America, New York, has filed suit in the federal court at Chattanooga, Tenn., asking for a receiver for the Chattanooga Iron & Coal Co., a subsidiary of the Southern Iron & Steel Co. The suit seeks to foreclose a mortgage for $600,000.

The Beler Water Heater Co., Pittsburgh, advises that it has increased its capital stock to take care of its increasing business, but that it does not contemplate any additional building at the present time, as it has recently leased an eight-story building opposite the present factory.

The Hildreth Mfg. Co., Lansing, Mich., has changed its name to the Novo Engine Co. C. E. Bement is secretary and manager. Aside from conducting a gray iron foundry, this concern manufactures the Novo line of gasoline engines. Its capital stock has been increased from $75,000 to $112,000.

The Weller Mfg. Co., North avenue, Chicago, has begun the erection of its plant at Forty-fourth and Courtland streets, that city, which will be finished in the spring. The building will be a fireproof machine shop, 125 x 250 feet, of brick and steel construction. A complete line of elevating and conveying machinery, pulleys, shafting, etc., will be manufactured.

The Columbus Wire & Iron Co., Columbus, O., advises that its new two-story building, 42 x 110 feet, which is now in the course of construction, is intended partly for storage purposes, and it has not been determined as yet what equipment will be needed. Another portion of the building will be used to house the machinery now in use in the present plant of the company.

The Lansing Wheelbarrow Co., Lansing, Mich., has changed its name to the Lansing Co. This has been done because of the fact that although the company originally manufactured wheelbarrows, it has grown until at present the output of this product is only a small part of its business. The company has been in business for 30 years, and has a capital stock of $1,000,000.

The Western Screw Products Co., St. Louis, the incorporation of which was recently noted, advises that the nature of its output will be screw machine products such as are required by the automobile and machine tool trade. No building will be done at the present time, as sufficient floor place has been leased, and enough equipment has been secured to carry on the work for some time.

The following officers and directors of the Standard Roller Bearing Co., Philadelphia, were elected at the recent annual meeting: President, Lenox Smith; vice president and general manager, R. S. Woodward Jr.; secreeary and treasurer, S. Howard Smith; William D. Sloane, Isaac H. Clothier, W. B. Osgood Field, Henry DeForrest Baldwin, Edwin Packard, Herbert DuPuy, Edward B. Smith, John C. Winston, George H. B. Martin and James Boyd.

Trade Notes

The Deforest Sheet & Tin Plate Co., Niles, O., manufacturer of block and galvanized roofing, as well as high grades of sheet steel, has opened a Chicago office at 836-8 First National Bank building. This office is in charge of W. H. Meyst, formerly with Theodore Geissman & Co.

The Jeffrey Mfg. Co., Columbus, O., which manufactures mining, elevating, conveying and power transmission machinery and coal mine equipment, has recently opened another branch office at 1201 American Bank building, Seattle, with P. E. Wright, who for the past ten years has been a sales engineer in connection with the home office, in charge. The Jeffrey company now maintains 13 branch offices in the United States, as well as nearly 100 agencies in the leading commercial centers throughout the world.

Fires

Fire which was caused by crossed electric wires damaged the machinery in the plant of the H. W. Caldwell & Sons Co., Chicago, machinists, on Nov. 21, the loss being about $20,000.

The plants of the Southern Machine Co. and the Southern Brass Bed Co., New Orleans, were damaged by a general fire in that city recently. The loss of the two companies combined was about $25,000.

H. W. Caldwell & Co., Western and Seventeenth streets, Chicago, manufacturers of gears and conveying machinery, suffered a loss of $30,000 by fire, Nov. 21. There will be no interruption to business.

The J. Baum Safe & Lock Co., Cincinnati, was badly damaged by fire on Nov. 22, the loss being in the neighborhood of $100,000. Two children were fatally injured, and many of the employes of the company narrowly escaped injury.

The boiler shop of the Avery Mfg. Co., Averyville, near Peoria, Ill., manufacturer of threshing machines and farm machinery, was practically destroyed by fire of an unknown origin on Nov. 22. The loss will approximate $100,000.

The plant of the Lehigh Valley Structural Steel Co., Allentown, Pa., was badly damaged by fire, Nov. 10, which was caused by sparks from a locomotive. The loss will be about $20,000. The plant was opened in March, 1910. D. C. Williams, Chicago, is president of the company.